Air Conditioning Sales for August . . . . . Pg. 5

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Special Emphasis on Materials

Ancient alchemists searched for the *philosopher's stone*, a theoretical material which, when rubbed on regular metals, would turn them to gold.

Today's engineers are seeking miracle refrigerants, better oils, stronger metals, more stable plastics.

Both the fabled alchemist and the modern engineer realize the importance of having the right material to do the job. Those who would laugh at the alchemists' search for a material which does not exist should consider that many of the materials now used in industry did not exist; they have been created by man.

In this issue, the NEWS publishes information about the impact of some of these newer materials on heating-cooling technology.

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Californians Attack Apprentice Decline

LOS ANGELES — Management and labor representatives of the refrigeration and air conditioning industry in California, concerned about the diminishing supply of apprentices, are attacking the problem on a statewide level.

Functioning under a Joint Refrigeration & Air Conditioning Council of California, composed equally of representatives of RACCA associations and UA locals, industry members met

(Continued on Page 4, Col. 5)

Start Bulletin To 'Melt Ice' between RACCA, Others

LAS VEGAS, Nev. — In a move designed to improve communications between air conditioning and refrigeration contractors, and manufacturers and wholesalers, board of directors of Refrigeration & Air Conditionion Contractors Assn. (RACCA National) has authorized issuance of a special bulletin in which will be published the findings on studies of various problems that exist between these segments of the industry.

This bulletin will be a two-way street in which manufacturers will be afforded an opportunity to express their viewpoints, and to state their attitude on relationships with contractors (as has been done in the first bulletin issued).

"This bulletin will be called the 'Defrost-O-Gram' as an expression of our hope that it will help to 'melt the ice' between RACCA and other segments of the industry," said Walter McCarty, president of RACCA National. "We believe that many of the contractors' problems with manufacturers is our own fault because we failed, until recently, to establish any real communication between the manufacturer and RACCA."

(Continued on Back Page, Col. 1)

9 TVA Power Distributors Promote Heat Pumps with Cash Bonuses

CHATTANOOGA, Tenn. — A cash bonus promotion to stimulate the sale of heat pumps, central air conditioning, and resistance heating is being suggested to TVA area power distributors by the Electrical Demonstration Branch of the Tennessee Valley Authority.

Looked upon as a long range promotion that should run at least two years, the program is aimed at the new home and remodeling markets. Its avowed purpose is to prevent competitive fuels from making serious inroads in the heating and air conditioning market in TVA territory.

The program suggests that power distributors offer to homeowners or speculative builders the following bonuses:

$25 per ton on heat pumps with no bonus paid on supplemental heat installed.

$10 per ton on central air conditioning, with each installation figured to the nearest half-ton.

(Continued on Page 23, Col. 4)

RSES Meets In Toronto Nov. 2-5

Will View CRACA Show, Hear of New Industry Developments

TORONTO, Ont., Can.—The first annual meeting of the Refrigeration Service Engineers Society to be held outside the United States will get under way Thursday morning, Nov. 2, at the Royal York hotel here.

This 24th annual convention is expected to be the largest in the group's 28-year history. It will end on Sunday, Nov. 5.

Departing from the usual custom, the first business session will start at 9 a. m. Nov. 2, adjourning at noon to permit those attending the convention to visit the 4th CRACA Show being staged here Oct. 31-Nov. 2.

The Canadian Refrigeration & Air Conditioning Assn. industry show in the Royal York's Canadian Room will have some 50 exhibits by air conditioning and refrigeration manufacturers and suppliers.

The educational program for the RSES convention includes

(Continued on Page 23, Col. 1)

Carrier Thru-Wall Heating-Cooling Unit Is Flexible

SYRACUSE, N. Y. — Carrier Air Conditioning Co. has introduced a new through-the-wall heating unit designed for easy addition of a self-contained cooling or heat pump package.

Company officials predict the versatile, compact unit will be widely used in apartments, hotels, motels, clinics, and small office buildings.

Called the "Thru-the-Wall Weathermaker," the unit can heat by steam or hot water from a central boiler, by electric resistance, or by the combination of a heat pump and electric resistance.

A low-cost, self-contained cooling or heat pump package can easily be installed at the time of installation or in the future, and is merely inserted through the wall and plugged into a control box, it was pointed out.

"With this equipment, a high-quality year-round system can be installed at low first cost, or winter air conditioning can be provided with summer cooling available at the occupant's option," said Hermann C. Hoff-

(Continued on Page 4, Col. 3)

Three Announce Room Unit Lines

Westinghouse

COLUMBUS, Ohio—An "air jet" vane line of nine models of room air conditioners has been added by the Westinghouse Major Appliance Div. The basic 1961 line included 12 models.

The company also announced an expanded line of five dehumidifiers paced by the "Custom Supreme" combination dehumidifier and space heater. The

(Continued on Page 23, Col. 1)

Republic

BEVERLY HILLS, Calif.—Republic Air Conditioning Co., Div. of Republic-Transcon Industries, Inc., began production Oct. 21 in the company's new multi-million dollar Dallas plant of a totally new line of aluminum room air conditioners, it was announced by Robert B. Starnes, division president.

"The nine models in our

(Continued on Page 23, Col. 3)

Admiral

CHICAGO—Highlighting the 1962 Admiral room air conditioner line is a 2½-hp window unit with a cooling capacity of 28,000 Btu capable of effectively cooling a ranch home, according to Admiral Sales Corp.

James R. Gall, sales manager-air conditioner division, said the new "Imperial" model can remove up to 7½ pints of

(Continued on Page 23, Col. 4)

Bell & Gossett Offers Stock For Reznor

Would Operate Heater Mfr. as Subsidiary, Holders Vote Nov. 2

MORTON GROVE, Ill.—Bell & Gossett Co. last week announced the proposed acquisition of Reznor Mfg. Co., Mercer, Pa., on an exchange of stock basis.

According to R. E. Moore, Bell & Gossett president, Reznor shareholders would receive 18¼ shares of B&G common for each share of Reznor. He said 479,975 shares of B&G stock would be exchanged in the transaction.

The acquisition is subject to approval by Reznor's 90 shareholders, who will vote at a special meeting on Nov. 2.

Reznor, founded in 1888 by George Reznor, is one of the largest producers of gas-fired unit and duct heaters, it was pointed out. The company's annual sales volume is over $7 million. Bell & Gossett manufactures heating, air conditioning, and electronic equipment.

The newly-acquired company would be operated as a wholly-owned subsidiary of Bell & Gossett, with no proposed changes in management. David R. Webster would continue as president of Reznor.

Reznor employs approximately 200 people, with 150,000 sq ft of manufacturing area.

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Welcome, Newcomers

To those of you who are reading "Inside Dope" for the first time (new subscribers, we trust) please let us explain that this is *your* "audience participation" column—if you decide you'd like to "join the club."

Being an all-industry *newspaper,* there will be portions of this publication which may not be related directly to your individual occupation. Some of the material we publish is directed toward engineers, or contractors and dealers; some for manufacturers, and certain articles could be useful only to servicemen.

It's quite like your local daily newspaper. Your wife probably skips the sports section, you don't read the society pages or advice to the lovelorn, and the financial page has nothing for your junior-high daughter.

But everybody reads the comics and the "human interest" columns.

Purpose of "Inside Dope" is to have something for everybody—humor, human interest, unusual information, predictions for the future, practical analyses of economics affecting your job—PLUS "audience participation."

That's where YOU come in. Substantial numbers of subscribers contribute anecdotes, ideas, and gripes to "Inside Dope." They enjoy seeing their efforts in print, and so do all who read such. Would you like to join our club, and participate, too?

For example, we are interested in *double entendre* typographi-

(Continued on Page 8, Col. 1)

Philco Expanding Number of Outlets For Its Custom Built-In Equipment

PHILADELPHIA — A new franchising move to extend Philco custom built-in appliances to a wide range of outlets to be called Special Marketing Distributors was announced recently by John L. Utz, director of special markets for Philco Corp.'s Consumer Products Div.

The Special Market Distributor contracts will be offered to the following outlets: dealers with contract departments; department stores with contract departments; lumber companies; building supply companies; plumbing wholesalers; electrical wholesalers; kitchen supply companies, and built-in appliance distributors.

The built-in, custom Philco products to be sold by these new distributors include air conditioners and thru-the-wall installation kit, custom ovens, custom surface units, drop-in custom ranges, dishwashers, garbage disposers, and under counter "Duomatic" combination washer-dryer.

"The objective of the new program," Utz said, "is to increase Philco custom built products to the new builder and remodeling fields through the specialized wholesale outlets with whom the builder and remodeler normally transacts most of his business."

He added that the franchise "will enable the distributor to sell to the builder of a few homes a year, or to the builder of 100 or more homes a year, and the pricing will be competitive throughout this range."

Both Philco Distributors, Inc., branches and independent distributors have assigned responsibilities to their sales force to implement the new distributor franchising program.

Ucon Names Barrett

NEW YORK CITY—The appointment of John E. Barrett, Jr., as research associate for "Ucon" refrigerants, was announced here by Union Carbide Chemicals Co., division of Union Carbide Corp.

During the past year, Barrett has worked at the Carbide technical service laboratory where he covered assignments on automotive lubricants and water treatment.

14-State Conference Nov. 10

Coal Industry Expects 29 Million Electrically Heated Homes by 1980

KANSAS CITY, Mo. — The heating of homes by electricity, a growing trend in residential construction which the coal industry hopes to use as a means of regaining a significant share of this large fuels market, will be the subject of a 14-state regional conference here Nov. 10.

Attending the one-day meeting, sponsored by the National Coal Policy Conference, will be representatives of home builders and contractors, architects, electric utilities, plasterers and lathers, mortgage bankers, electric contractors, insulation manufacturers and installers, dealers and manufacturers of electric heating equipment, railroads, and the coal industry.

Industry and labor representatives are expected to attend the meeting from Kansas, Missouri, Colorado, Iowa, Nebraska, Utah, New Mexico, Wyoming, North and South Dakota, Oklahoma, Illinois, Wisconsin, and Minnesota.

"The rapidly growing acceptance of electric heat by the American homeowner is one of the most encouraging market developments for coal in recent years," Joseph E. Moody, NCPC president, declared.

Coal Used To Generate 60% of Electricity

"Experts in this field freely forecast that 2,200,000 homes will be electrically heated by 1965 and 29 million by 1980. Since each electrically heated home uses about 20,000 kilowatt hours of electricity per year, and coal is used to generate at least 60% of all electric power, this means there will be created a new market for several hundred million tons of coal each year.

Moody said interested persons are invited to attend the meeting. Details may be obtained from the National Coal Policy Conference, 1000 Sixteenth St., N.W., Washington, D. C.

The Kansas City meeting, billed as the Western Regional Conference on Electric Home Heating, will hear experts in all phases of construction.

Promotion Tips

Tips on promoting the all-electric home will be given by Richard Smith of the National Electric Manufacturers Assn., and Frank Kitzmiller of the Edison Electric Institute.

Donald Kerns, president of Kern's Quality Homes, Inc., of Kansas City, will discuss the stake of the home builder in electric home heating, and Reuben Sell of the Sell Electric Co., also of Kansas City, will discuss the importance of electric home heating to electrical contractors.

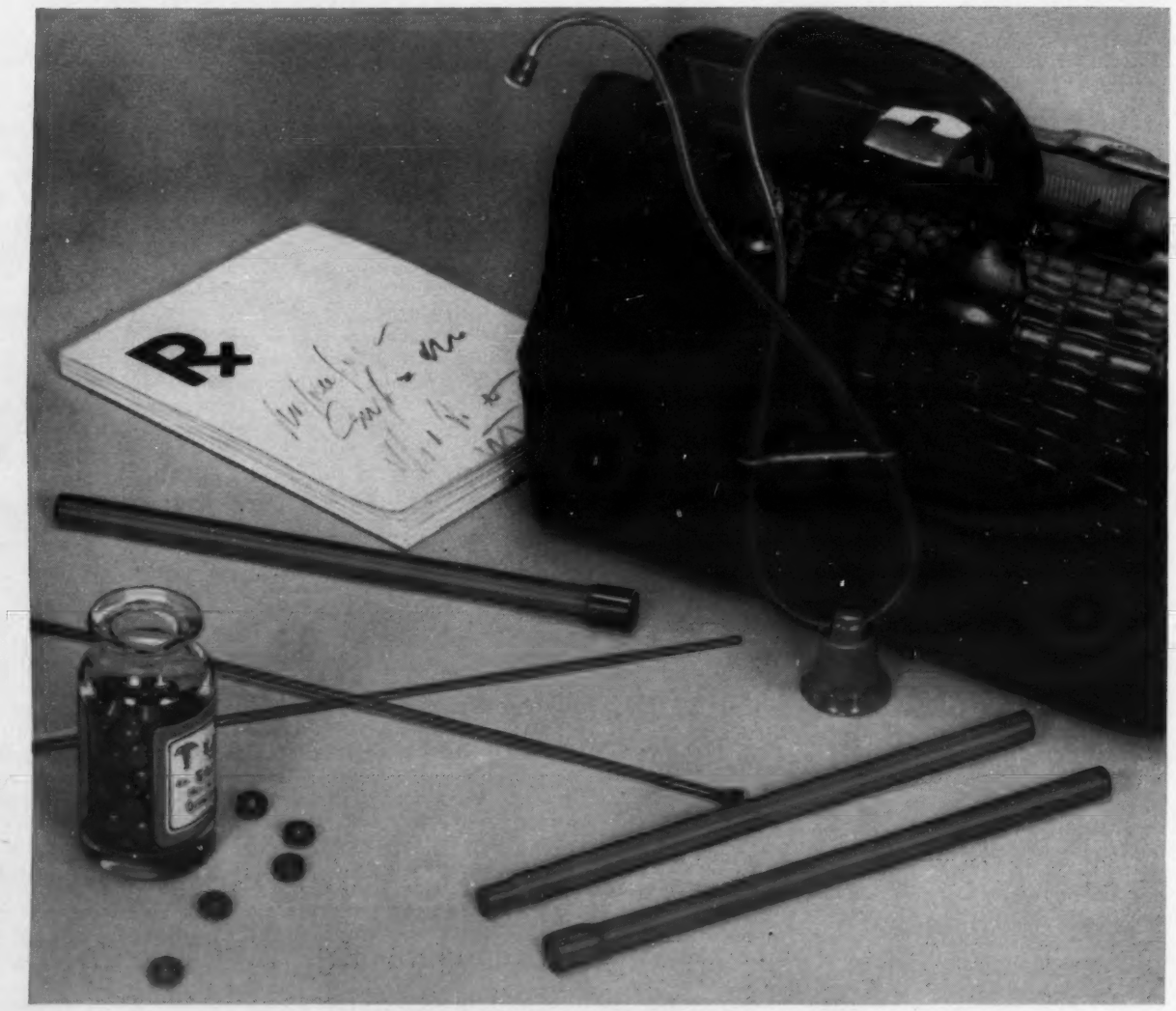
Financing

Financing the electrically heated home will be the subject of Edwin G. Callahan, assistant commissioner of the Federal Housing Administration.

The insulation of homes for electric heating will be discussed by Fred Sides, executive officer of the National Mineral Wool Assn., and the development and application of electric heating equipment by Lowell R. Mast, research director of the Commercial Controls organization.

Robert A. Geyer, architect on the staff of the Commonwealth Edison Co., Chicago, will report on the new 60-story high-rise twin tower Marina City all-electric apartment in Chicago. Michael F. Widman, Jr., assistant to the president of the United Mine Workers of America, will discuss the stake of the union worker in electric home heating.

At a luncheon meeting, Moody will talk on "Kilowatts and Coal, Partners for Progress."



RX for precision-drawn, trouble-free copper capillary and restrictor tube: consult a Small Tube Specialist. New product: capped-and-certified restrictor tubing with certification covering 100% testing of tube to meet flow specifications. After testing, lengths of certified tubing are capped at both ends (center above) with a heat-sealed plastic. Kensico produces capped-and-certified copper tubing in a broad range of sizes from a minimum of 0.072" OD by 0.026" ID to a maximum of 0.172" OD by 0.115" ID.

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Over the years, Kensico has also built a healthy reputation for producing highest quality copper tubing for general air conditioning and refrigeration use. Painstakingly produced to customer's exact specifications, it is available in coils and straight lengths, with a variety of end treatments as shown. Call Kensico today. Find out for yourself how well deserved is Kensico's reputation as a Small Tube Specialist. Air Flow Engineering Charts upon request. Write to KT-61, Kensico Tube Company Division, Mt. Kisco, N. Y.

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Robinson Technical Products, Inc. • MOUNT KISCO, NEW YORK

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NLRB Issues Cease and Desist Order In Omaha Secondary Boycott Case

WASHINGTON, D. C.—In a secondary-boycott case stemming from charges filed by Siebler Heating & Air Conditioning, Inc., Omaha, Neb., the National Labor Relations Board has issued a cease-and-desist order against Local 3, Sheet Metal Workers' International Assn., AFL-CIO.

Board members Phillip R. Rodgers, John H. Fanning, and Gerald A. Brown found, in agreement with Trial Examiner Thomas R. Kessel, that the union unlawfully picketed the construction sites of Patrick Construction Co. and Anderson Construction Co. to force them to cease doing business with Siebler and to force Siebler to recognize the union although it had not been certified.

However, Fanning and Brown did not adopt in full the basis upon which the examiner's finding is grounded. They relied, instead, solely on the fact that the picketing occurred at the Patrick and Anderson sites at times when no employes of Siebler, the primary employer, were present, according to an NLRB report.

Rodgers, while agreeing with the majority that the picketing at Patrick and Anderson was unlawful because Siebler was not engaged there at the times of the picketing, would adopt the intermediate report in this respect and would rely upon all of the facts and circumstances surrounding the picketing.

These include the fact that the union failed to limit its picketing to Siebler's nearby shop where Siebler's employes reported each day, and where they could have been effectively reached, the report said.

In its order, the NLRB directed the union to, among other things, cease coercing or restraining Patrick, Anderson, or any other person engaged in commerce where an object is to force or require Patrick or Anderson to cease doing business with Siebler, or to force Siebler to recognize or bargain with the union as representative of Siebler's employes, unless and until certified by the board.

Copeland Names Weigle To Head Eastern Region

SIDNEY, Ohio—The appointment of Joseph V. Weigle as eastern regional manager for Copeland Refrigeration Corp. has been announced by Rudy Berg, vice president.

J. V. Weigle

Weigle, in association with Lawrence H. Baker, will cover the entire Eastern Seaboard, maintaining offices at Bergenfield, N. J.

Weigle has been associated with air conditioning and refrigeration since 1950 as manager of field sales for Airtemp Div. and associate engineer with York Corp.

Hearings on Calif. Contractor Licensing Changes To Be Nov. 13

SACRAMENTO, Calif. — Testimony scheduled for a meeting of the Contractors' State License Board at Disneyland hotel in Anaheim Oct. 20 has been put over to the next meeting at the same place Nov. 13.

The testimony will relate to proposed changes in contractor regulations in California. A new section 780 would provide for license renewal and penalty fees. An amendment to Section 775 makes changes regarding waiver of written examination and provides time in the industry must immediately precede application for license.

Dante C. Fabiani Named Crane President

NEW YORK CITY—Directors of Crane Co. have elected Dante C. Fabiani president of the company according to T. M. Evans, chairman.

Fabiani

Fabiani joined Crane as executive vice president in December, 1960, and was elected a director at the company's annual meeting in April of this year.

Before coming to Crane, Fabiani was financial vice president and a director of McDonnell Aircraft Corp., St. Louis, and prior to that was a vice president of H. K. Porter Co., Inc., Pittsburgh.

FTC Decides

Discriminatory Prices OK To Keep Old, But Not To Gain New Customers

WASHINGTON, D. C. — Discriminatory price reductions are illegal when used to obtain new customers but not when granted in good faith to retain old customers, according to a 4 to 1 decision by the Federal Trade Commission against Sunshine Biscuits, Inc., Long Island City, N. Y.

The FTC majority opinion by Commissioner Sigurd Anderson held that sellers charged with discriminating in price among their customers in violation of Sec. 2(a) of the Robinson-Patman Amendment to the Clayton Act can validly use the "good faith meeting of competition" defense provided in Sec. 2(b) only where the preferential price cuts are offered in self-defense against competitive price attacks.

Ruling that this defense is not available to Sunshine in those cases where it gave discriminatory discounts to get new business, the commission ordered the company to stop charging different prices to competing resellers of its potato chips and other grocery products.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Beat a path to Davison

for better moisture trapping

For years, refrigeration and dehydration experts have put their faith in Davison PA-400. No higher capacity desiccant has ever been needed. NOW . . . if your specialized requirements for ultimate moisture removal—maximum drying at extremely low concentrations of moisture—call for a desiccant with even more unique capabilities, Davison suggests the newest companion to PA-400 . . . DAVISON MICROTRAPS.

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McQuay Promotes Gideon M. Cook

MINNEAPOLIS — Gideon M. Cook has been promoted to the expanded post of advertising and sales promotion manager of McQuay, Inc., manufacturer of air conditioning, heating, and refrigeration equipment, it was announced by G. G. Workinger, vice president in charge of sales.

G. M. Cook

Formerly regional sales manager and in charge of advertising for American Automatic Ice Machine Co., a wholly-owned subsidiary of McQuay, Cook will be directly in charge of the newly enlarged advertising, sales promotion, and merchandising department for the entire McQuay organization.

He will continue to handle the advertising, sales promotion, and merchandising for the ice machine subsidiary.

Cook joined the McQuay organization in 1940 and was transferred to the American Automatic Ice Machine subsidiary when it was formed in 1951.

Maxwell F. Rather Dies

MILWAUKEE — Maxwell F. Rather, retired executive of Johnson Service Co., died recently in Palm Beach, Fla., after a prolonged illness. He was 73.

Rather was a vice president, eastern district and export manager, and had completed 42 years of service at the time of his retirement in 1959. He was a member of the board of directors at the time of his death.

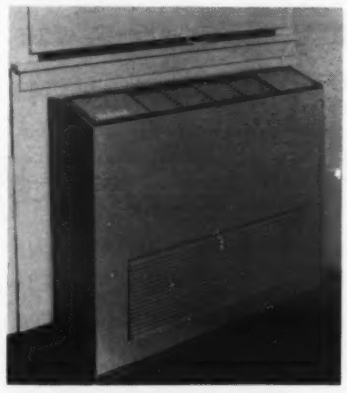
Carrier Thru-the-Wall Unit--

(Continued from Page 1, Col. 3)

mann, general sales manager of Carrier.

The Thru-the-Wall Weathermaker provides individual control and automatic changeover of heating to cooling. The occupant simply sets the fan speed control at "high" or "low" and sets the thermostat at the desired temperature. When the room is not in use, the unit can be shut off to save operating expense.

The unit can be installed, or a cooling package added, on a per-room or per-floor basis without affecting other parts of the building. Because individual units need access to outside air through the wall, the units are most economically installed at the time of construction. But application to existing buildings is facilitated by a telescoping wall sleeve which fits any wall thickness.



Thru-the-Wall Weathermaker.

The wall-hung Weathermaker is easily connected to existing radiator piping, or can be applied with electric resistance heat, according to Carrier. The cabinet is 34 in. wide, 8 in. deep, and 27 in. high.

The basic unit contains a two-speed centrifugal fan, a coil for steam or hot water heat or an electric grid for resistance heat, and an automatic control panel. To add cooling at the time of installation or later, a specially designed refrigerating package with 1-hp capacity fits into the wall sleeve supplied with the original unit.

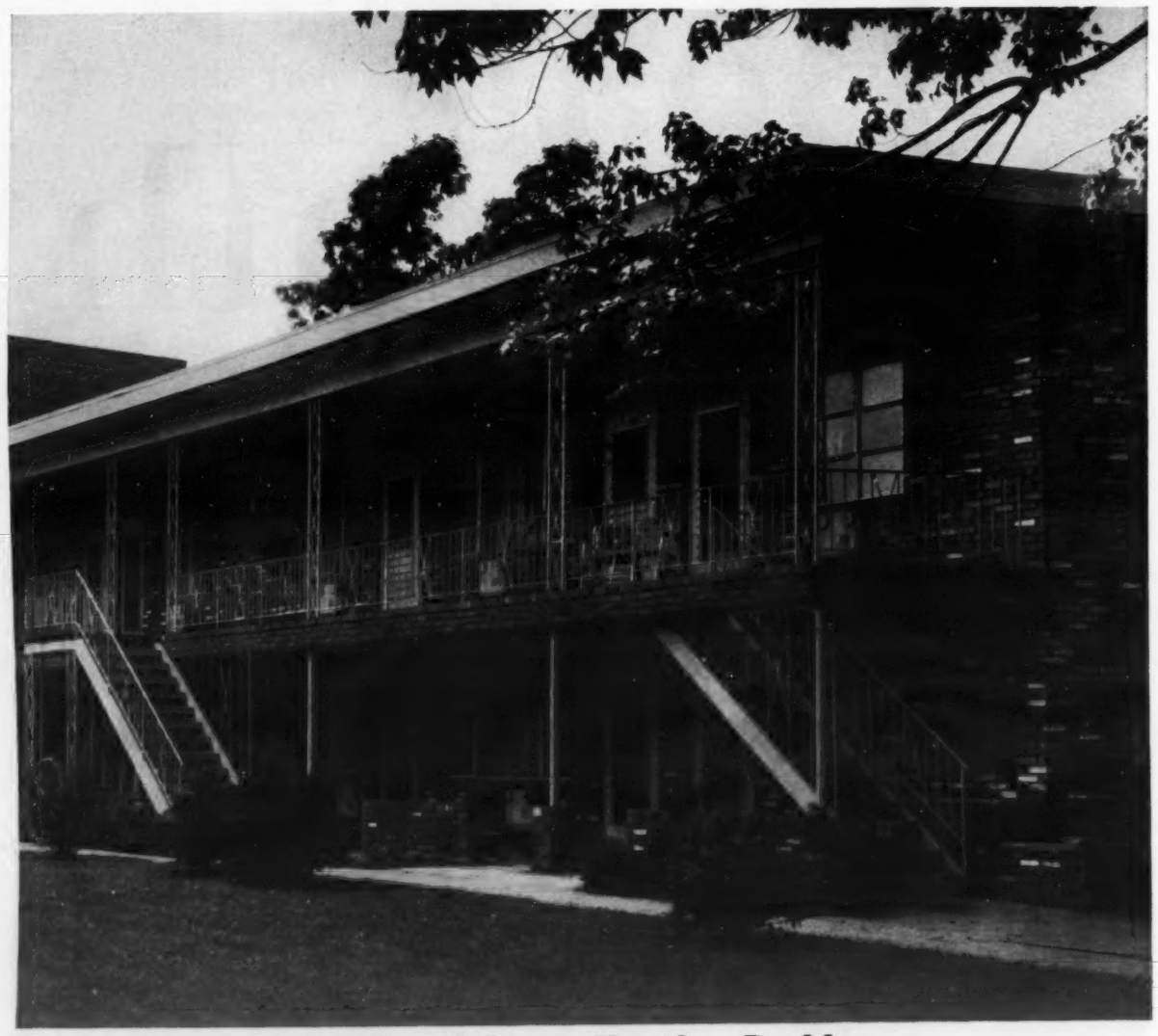
A heat pump assembly also fits the wall sleeve in the electric heat pump model. If outside temperature drops to 25°, a thermostat shuts off the heat pump and the resistance heater operates alone.

"The factory assembled and pre-wired heat pump or refrigerating packages can be slipped into the sleeve and plugged into the power socket of the base unit by an owner or maintenance man working inside the building," it was stated.

"If cooling is not installed initially, an insulated plate is supplied with the wall sleeve to seal off the opening until needed. A zinc-coated steel wire grid is also supplied for the external opening and an extruded aluminum grille which can be colored to match aluminum exteriors is available as an accessory.

"The unit is simple to maintain. All parts are easily accessible, and all steel components are zinc-coated for corrosion resistance. Maintenance work will affect only one unit. Alternate cooling or heat pump assemblies can be inserted to replace a unit which might have to be returned to the shop for service.

"A throw-away filter collects dust and dirt from the air, and movable directional grilles on top of the cabinet provide a variety of air deflection patterns."

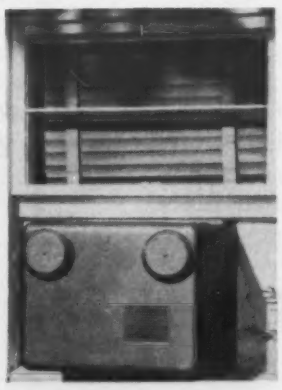


Solve Small Space Heating Problems with Suburban Novent-Dynavent GAS Heaters

Heat by the roomful...that's what you get when you specify Suburban Novent or Dynavent Gas heaters. No need to heat unused or unoccupied rooms. No flue or chimney needed. Ideal for added rooms, cabins, playrooms, closed-in breezeways, offices and garage workshops.

Suburban Novent and Dynavent Gas heaters give you all the advantages of modern gas heat . . . high efficiency, precise control, speed, cleanliness, economy and dependability of supply. Gas can be the answer to your unusual or everyday heating problems. Heat better for less with Suburban Novent or Dynavent Gas heaters. For complete information, contact your local Gas Company, or write to Suburban Appliance Co., Dept. AN 1061, Morristown, New Jersey.

American Gas Association



Right: These units are installed at the Price Apartments, Nutley, New Jersey (shown above). Each apartment is individually heated to exactly the temperature desired by the occupants.

FOR HEATING... GAS IS GOOD BUSINESS!

Apprentice Problem

(Continued from Page 1, Col. 1)

Sept. 30 to define ways and means of increasing the number of apprentices as well as keeping them in the trade.

The group heard and adopted a report of a special council sub-committee which cited, among other things, recommendations concerning the age limit of 25 for apprentices; the problem of sending apprentices outside of the jurisdiction of the local union; the ratio of journeymen to apprentices; lower beginning rates for apprentices; unreasonably high fringe rates; and lack of education among employers.

The sub-committee report was prepared jointly by E. H. Ballard, of branch UA Local 250; Louis Bergan, UA Local 364; Joe Mazzola, UA Local 38; Ken Morris, RACCA of Northern California; Bill Clark, RACCA of Sacramento District; and Al Hanson, RACCA of Southern California.

According to Ballard, who serves as secretary of the statewide refrigeration and air conditioning joint council, a detailed summary of the recommendations adopted by the council members is being finalized and will be submitted to all apprenticeship committees in California.

Mfr. Room Unit Sales Down In August, Dealer Sales Rise In Some Areas

DETROIT — The National Electrical Manufacturers Assn. estimated that industry sales by manufacturers of room air conditioners in August totaled 54,200 units, compared to 77,900 a year earlier.

This brought unit sales for the first eight months of 1961 to 1,330,500, down slightly from the 1,355,700 sold in the corresponding period of 1960. The figures are based upon expansion of data reported to the NEMA Statistical Dept. to cover total industry sales including exports.

Reports from various areas around the country, as previously reported in the NEWS, have shown August sales up in several of them.

MIAMI AREA

Another report, from Florida Power & Light Co., Miami, showed air conditioner sales in the utility's territory 52% ahead of August of last year, totaling 6,544 against 4,314. For the first eight months of 1961, sales climbed to 42,231 from 32,886 in the same period of 1960, a gain of 28%.

The FPL report shows unit sales to dealers as reported by state wholesalers, and sales by department and chain stores and some retailers who purchase their merchandise from sources other than state wholesalers.

Florida Power & Light also reported that total sales for a four-month Home Comfort Cooling campaign amounted to $7,810,280, compared to $6,115,550 during the same period last year.

Air conditioners rose to 131% of quota with total sales of 26,267 units. Exhaust fans went even higher with 135% of quota, but small portable fans, at 97%, didn't quite make the grade.

SOUTHERN CALIFORNIA

According to the Electric League of Southern California, distributor sales of air conditioners and heat pumps in the first eight months of 1961 gained 9.3% compared to the like 1960 period.

The Electric Power Board of Chattanooga reported that dealers in its territory sold 841 domestic air conditioning units, including 19 central units, and 35 residential heat pumps in August. The comparative figures for August, 1960, are 1,357 air conditioning units, including 5 central units, and 24 heat pumps.

Sales of commercial air conditioning units and cooling devices in August amounted to 66, compared to 30 the previous August.

WICHITA

In the territory served by Kansas Gas & Electric Co., Wichita, retailers sold 367 room air conditioners in August, against 511 a year earlier. In the January-August period, the dealers sold 4,212 units, 7.8% less than in the like 1960 period when the total was 4,570.

Sales of central residential systems dropped to 50 in August from 60 in August of last year. Sales for the first eight months, however, were up 4.9%, totaling 465 compared to 443 in the 1960 period.

A report by The Washington Water Power Co., Spokane, shows that sales of electric air conditioners in the Washington-Idaho area in August were substantially ahead of the previous August.

An interesting fact is that central units outsold room air conditioners, 136 to 90. In August, 1960, 28 central units were sold compared to 106 room units.

For the first eight months of 1961, room unit sales rose to 1,621 from 900 in the like 1960 period and sales of central units climbed to 319 from 171.

Distributor Sales For August Down 2% from Last Year

WASHINGTON, D. C.—Sales of air conditioning and refrigeration equipment and supplies distributors in August were off an average of 2% from August, 1960, and up 6% from July, according to the latest monthly wholesale trade report of the Census Bureau.

For the first eight months of this year, the distributors' sales declined 7%. Their end-of-August inventories were 2% higher than a year earlier.

August sales of plumbing and heating equipment and supplies distributors were down an average of 1% from the previous August and up 14% from July. For the January-August period, their sales were off 4% compared to the like 1960 period.

Hydronics Industry Plans NAHB Exhibit In Chicago Dec. 3-7

CHICAGO — Following through in its drive to capture a larger share of the new house market, the hydronic industry will again display its wares under an industry banner at the 18th annual exposition of the National Association of Home Builders.

Nine manufacturers will team up with the national Better Heating-Cooling Council in a 100-ft-long exhibit at the show, to be held in Chicago's McCormick Place, Dec. 3-7.

The exhibit will be one of the largest at the show. It will take up 1,000 sq ft of floor space, 200 sq ft more than the previous industry exhibit last January.

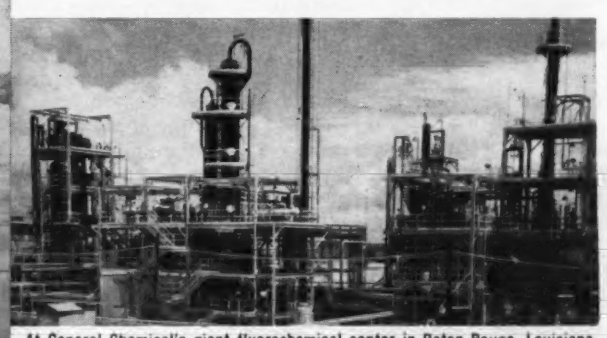
Participating with BHC in the exhibit will be American-Standard, Bell & Gossett Co., Burnham Corp., Crane Co., Edwards Engineering Corp., Hydrotherm, Inc.; L. O. Koven & Brother, Inc.; Slant/Fin Radiator Corp., and Weil-McLain Co., according to the announcement.

Robert J. Waalkes Dies

HOLLAND, Mich.—Robert J. Waalkes, 40, product engineer for Hart & Cooley Mfg. Co. here, died last month following a heart attack, the company reported recently.

He was well known throughout the warm air heating and air conditioning industry, having served as a member of the National Warm Air short course committee and chairman of the Technical Data Committee, and as instructor at many of the university short courses across the country, according to the report.

Aluminum fluoride for West Coast aluminum smelters is produced at General Chemical's Bay Point, California, Works by treating aluminum salts with hydrofluoric acid. Hydrofluoric acid is also the basic raw material for fluorinated hydrocarbon refrigerants. As the nation's leading producer of "HF" General Chemical has earned a basic position in refrigerant manufacture.



At General Chemical's giant fluorochemical center in Baton Rouge, Louisiana, the knowledge and experience gained in working with fluorine and its compounds is applied to production of highest purity "Genetron" refrigerants. In addition, General manufactures "Genetron" in Danville, Ill., and at a new plant in Elizabeth, N. J., which has increased over-all capacity by more than one-third.

What does ALUMINUM have to do with genetron® super-dry refrigerants?

Quite a lot . . . for General Chemical is the nation's leading producer of aluminum fluoride—a fluorine compound which plays a vital role in modern methods of aluminum manufacture. The same technical "know-how" which has made General the leader in fluorochemical research and production makes "Genetron" refrigerants so outstanding throughout the air conditioning and refrigeration industry. *It makes sense to call on the leader in fluorine chemistry for fluorinated hydrocarbon refrigerants.*

Behind "Genetron" Super-Dry Refrigerants is a research organization which is internationally recognized for its intensive work in fluorine chemistry.

Even more important to every user of "Genetron" Super-Dry Refrigerants are General Chemical's advanced manufacturing facilities, which have helped bring quality standards for fluorinated hydrocarbon refrigerants to new "highs" of purity and dryness —a major contribution in itself.

"Genetron" Refrigerants are approved, accepted, *preferred* because they are *performance-proved*. Refrigeration engineers, contractors and servicemen endorse them. Wholesalers recommend them. Next time you order, insist on "Genetron" and be sure of the best! Available from wholesalers everywhere.

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Look to the leader in fluorine chemistry . . . insist on "Genetron".

Exploration with Modern Materials

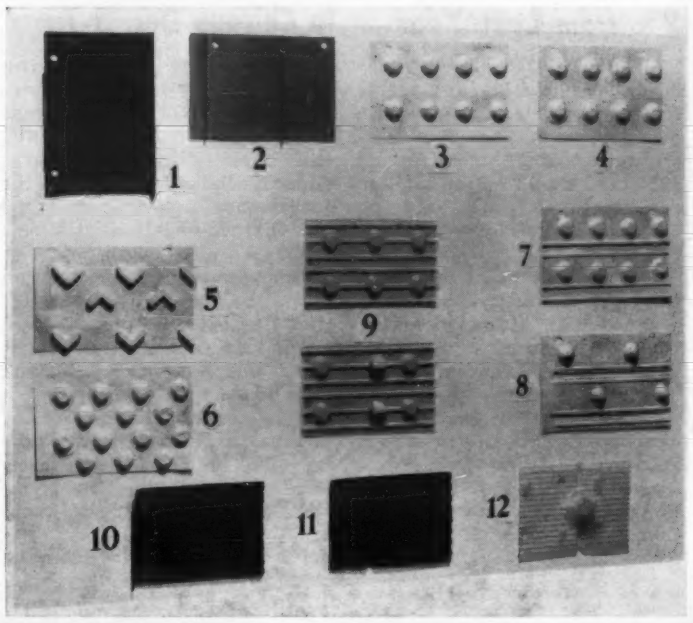
By H. R. Krueger,
Director of Engineering,
Acme Industries, Inc.

During the past five years, our company has done considerable exploratory work with plastics in an attempt to improve our product designs and increase equipment performance. This accumulated experience offers a timely "case study" of what can be achieved, through an engineered application approach, in the use of modern materials to accomplish these important objectives.

Air conditioning and refrigeration, by and large, presents a relatively new field of application for plastics. That is why proper use of such newer materials can prove rewarding. In our own case, we have (1) reduced product costs, (2) simplified and improved parts manufacture and assembly, and (3) obtained other worthwhile advantages.

But such gains have been accomplished only through preplanning, painstaking effort—and discouragement.

Plastics have many excellent characteristics. By the same token, however, they possess limitations which can cause trouble in the application of these materials if their drawbacks are overlooked.



NON-WETTABILITY of plastic led Acme engineers to development of many different fill deck sheet designs in their quest for better water cooling tower performance and lower cost.

In redesigning and engineering inexpensive, high-quality air conditioning and refrigeration components, therefore, the most practical approach we have found is to start with the function the parts or units should perform, rather than with detailed specifications.

The design engineer should not be shackled with specifications at the very inception of a project. Instead, give him elbow room. Tell him what you want the parts or units to do, then let him engineer the job.

As an example of this engineered application approach in action, consider Acme's recently developed cooling tower design. While its development entailed several years' preliminary work, plus many redesigns, we had a good idea of what we wanted right from the very start.

Basically, we sought a material for the cooling tower decking that would prove more efficient than the galvanized sheet or redwood conventionally used. We believed one of the newer plastics might provide the answer; our first step was to examine the function of the cooling tower.

Basically, a cooling tower is a ventilated chamber for spraying water into a stream of air to cool it. In practice, the water sprays over the fill deck.

In the Acme counter-flow tower, where we started our program for exploring new materials to improve product design and performance, water passes down over the vertically stacked fill decks and air is forced upward from the bottom. As a result, water and air in the unit flow in parallel but opposite directions.

Polystyrenes Looked Promising

The newer type plastics, polystyrenes principally, gave strong evidence on several counts of offering decided improvements over redwood used for conventional deck designs:

1. Light weight;
2. Freedom from attack by fungus, acid, or alkali;
3. No absorption of moisture;
4. High impact strength;
5. More readily formed; and
6. Can be made into far thinner sections.

In our initial approach to the problem, we used the same number and sizes of plastic sheets as the galvanized sheets employed in an earlier deck design. But we quickly made an interesting discovery: The plastic would not wet—water poured over a sheet of the material used would not spread out into the thin film required to obtain maximum use from the surface area for the given water volume.

This condition presents no problem, of course, in the case of redwood or galvanized steel. Even if an oily surface remains following manufacture, the latter material quickly becomes wettable from the action of dust, scale, or other impurities. But it became readily apparent that as far as plastic was concerned, the nature of this surface would encounter little change in use.

How To Get Wettable Surface

Our problem, then, was: How to get a wetttable surface? We tackled the problem in various ways: Abrading the plastic, chemically etching it, even painting it—all without success.

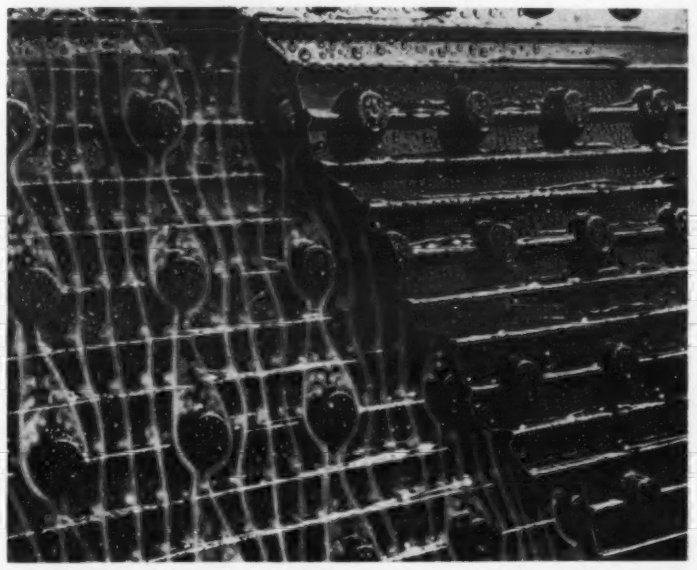
Then our engineers veered off in another direction. We decided to try mechanical design changes on the theory that optimum design would result from maximum surface; if provision were made for enough surface area, the cooling tower would work, we reasoned.

Result? To put it briefly, failure upon failure.

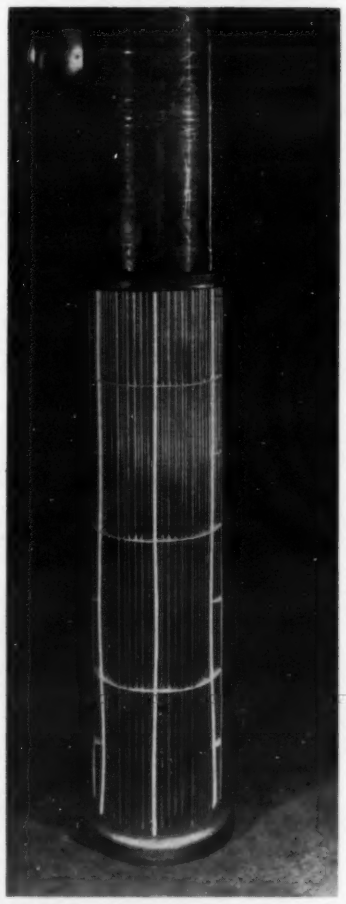
Our initial design was vertical ribs. The major difficulty encountered here was that following entrapment in one of the vertical chutes, either air or water would not redistribute; and with the chutes running full of water, no air could get through.

Design step number two: Put little buttons on the plastic sheet and arrange them in a staggered pattern. Again, failure. We found the water ran in rivulets from one button to another. A third idea was to place a screened impression on the surface. This, too, proved a failure—but it also proved a big step forward in our thinking.

It was at about this stage in our efforts that we began to understand the problem of wetting the surfaces and spreading the water. Next, we came up with a chevron design, using inverted V's on the plastic sheets in an attempt to spread the water and prevent it from gathering.



FINAL RESULT is this button-and-rib pattern on plastic sheet which efficiently spreads water on non-wettable surface. Buttons also improve cooling function by creating turbulence in upcoming air (left) at water-spread joints.



ANOTHER APPLICATION of plastics by Acme is the use of vinyl rods in coolers for small chillers. The material is noncorrosive, also makes possible the use of simple tooling.

As the water came tumbling down onto one row of inverted V's, it would spread, drop into the row below and respread. This design proved unsatisfactory; however, it did indicate that, finally, we were on the right track to the solution of the problem. Moreover, we found that air pressure drop was too great for economical operation.

As with any new design problem, we also found that we were profiting through our failures. Following the establishment of each performance improvement, we re-approached the problem to think out what we had done. The result of this introspective process, finally, was a combined button-and-spreader rail design that turned the trick. When it was put into the test tower, this deck immediately demonstrated superior results.

Water flows down over the buttons and spreads. The stream then hits a little spreader rail, fans out along the rail, and spills over. The water may reform into rivulets before getting to the next rail, but then it spreads again.

LUCAS CAP. TUBE CLEANER
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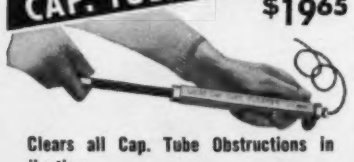

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Once this design proved successful, we tried putting ribs on the other side of the sheet but this did not yield any benefit. A further improvement was made through devising a method to maintain positive clearance between sheets in the wire baskets, which hold the sheets in position in the tower. This is merely a key button which prevents the sheets from shifting.

Now, decking of Acme cooling towers are made of tough, chemically inert polystyrene plastic sheets so arranged to permit handling for routine inspection and cleaning. Molded into these sheets are (1) thousands of conical projections which control the turbulence of air as it moves through the unit, and (2) horizontal spreader ribs which control downward flow of water by spreading it over the sheet surface.

Investment Already Paying Off

This entire development represents a sizable investment in engineering time and effort; but it is already paying off in terms of a better designed product with improved performance capability and easier, less expensive maintenance for the user and lower cost of production for the manufacturer.

Also, this development aptly illustrates a basic tenet of sound engineering: You don't know why you succeeded unless you fail a few times. Generally speaking, good design is progressive in nature; improvements are effected in successive steps.

When working with new materials, one must become familiar with their properties in specific relation to the individual application at hand. For example, the textbooks may give the softening temperature or other physical properties of a particular plastic, but the fact that it has a greasy and non-wettable surface is something one must learn for himself in working with the material.

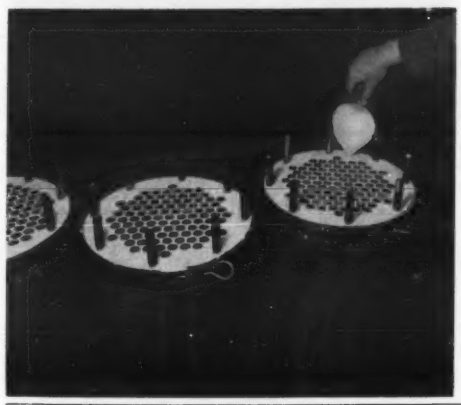
Experience Needed To Deal with Unexpected

How to deal with such unexpected factors takes experience. In trying to design a new product with a new material, the engineer must expect and should plan to meet these problems.

Another successful application of plastics is in the fabrication of eliminators, which release entrained water droplets without impeding air flow. Formerly made of galvanized steel, these Z-blades are now made of rigid formed plastic. Thanks to the simplicity of pattern-making for high-impact polystyrene, we have been able to utilize a unique baffle design in plastic previously not feasible with metals.

The switch from brass to plastic has resulted in a cost reduction of from 50 to 75% for tower nozzles. Furthermore, they are lighter in weight and are proving advantageous from a purely functional standpoint.

In still another instance, a ¾-in. thick sheet of foamed plastic insulation has replaced 3 in. of rock cork and a sheet metal jacket on a small chiller (up to 125 tons capacity). Result: A substantial improvement both in fabrication and in use. The chiller, moreover, has a better appearance, and takes up less space.



APPLICATION of epoxy resin around silver soldered joints of condenser tubes provides extra protective safeguard against electrolytic corrosion. Other important benefits gained through impregnating metal with epoxy in this application include provision of excellent seal and gasket surface, resistance to water and erosion, and ease of application.

A plastic material has enabled us to lick the problem of electrolytic corrosion around silvered soldered joints of condenser tube sheets.

Epoxy resin is poured around the joints and hardens rapidly to provide a hardened, tough, durable surface. Waterproof and erosion-resistant, it provides a perfect seal and a good gasket surface that impregnates the metal and is easily repaired if ruptured.

From an engineering point of view, pioneering with plastics has proven profitable for Acme thus far. Results obtained are encouraging; their promise is incentive for continued investigation and experimentation. We feel we have merely started to scratch the surface in the efficiency and economy potentials such new materials provide.

C. V. Hill Sees 4 Materials Groups Needing Improvement

TRENTON, N. J.—"There is still need for a refrigerant between R-12 and R-22."

Refrigerant is one of the four material groups needing improvement, according to engineers of C. V. Hill & Co., Inc. Other suggestions:

- Although progress has been shown in the development of better insulations, we feel that much work has to be done to enable a manufacturer to purchase a good insulation at a lower cost. Presently, various suppliers have been working with foam urethane insulation. Although this has very good qualities, the cost is still too high.
- Better lighting, particularly for low temperature cases. With present lamps, radiancy seems to decrease as temperature goes down. Under the subject of lighting, we feel that much work can be done in the area of developing the right phosphorus to give complementary colors to various products. This is particularly true in lamps used over meat displays.
- Still need for the development of a more efficient compressor.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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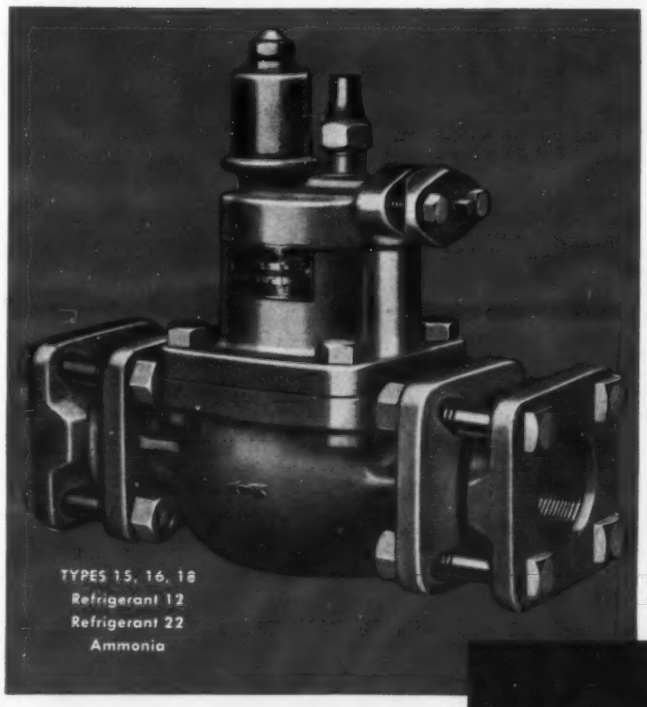
ALCO EVAPORATOR PRESSURE REGULATORS



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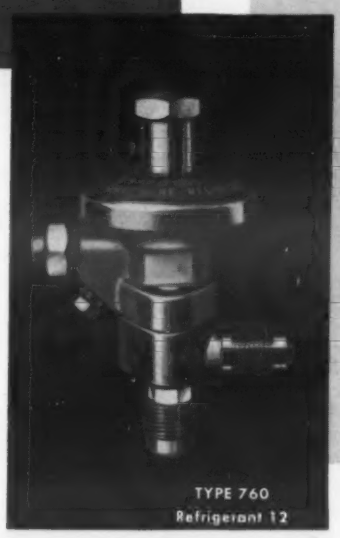
Eliminates tube bursting



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Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

cal errors. Here are sample dandies which subscribers have found in their local newspapers:

He is a retried executive of General Motors. — *Long Island Star-Jornal.*

THEN the Bulldogs staged a long march, one of 73 years, to go on to score again. — *New York Times.*

The society is a federation of 25 National organizations devoted to discouragement of humanistic studies. — *New York Times.*

DAY WORK—Exp. cleaning or ironing. $700 daily and carfor. TY 4-5136.—*Detroit News.*

So You Think You Got Troubles Dept.

Maintaining a harem is not all a bed of roses. King Ibn Saud of Saudi Arabia keeps approximately 90 women—three wives and 85 or so concubines. In the atmosphere of luxurious boredom which surrounds these, er, ladies, envy is a strong emotion.

It is reported that one of them spotted a Tyler supermarket-type refrigerator advertisement in the NEWS and ordered one of the same. (We have subscribers all over.)

Her 80-odd rivals then clamored to have their "ordinary" refrigerators replaced by the glass-front Tyler type commercial cases. Court chamberlain vetoed these purchases as an unnecessary and ridiculous expense.

Whereupon two of the gals summoned their slaves and ordered them to unplug their refrigerators and heave them out a third story window onto the courtyard.

Commercial display cases immediately were ordered to supply the demand, even though none of them ever contains anything more vital than bottles of drinking water, cologne, etc.

This story has a moral that the average husband should recognize. And it should interrupt his daydreams of a tax-exempt harem, incidentally.

How Close Is the Fuel Cell?

Both General Electric and General Motors (and many other corporate labs) are experimenting with the fuel cell—which reverses that mysterious chemical process which creates organic compounds from air, water, and carbon dioxide.

The so-called fuel cell converts stored inner energy of organic compounds directly into electricity—theoretically with 98% efficiency.

One such apparatus consists of an unglazed porcelain dish containing ordinary potassium hydroxide set in a solution of iron chloride. From amongst this amalgamene electrodes protrude into a small electric motor.

When a drop of formaldehyde, alcohol, or some other organic compound falls into the porcelain dish, an electric current is created.

Energy, which came originally from the sun, thereupon is released and converted directly into useful power.

Right now this deal may not sound interesting to most readers. Please believe us, though: we are told the "fuel cell" may obsolete atomic-power electricity before the latter becomes commercially important.

Refrigerated Space Speed

America's Air Force researchers are exploring a revolutionary theory, to wit: a new type of super atomic energy can be released by making atoms extremely cold instead of normally hot.

Originator of said concept, scientist Robert Leon Carroll, is confident his theory will prove out—and will make possible space flight literally faster than a flash of lightning. Fuel could be an ordinary and inexpensive material—possibly even common sand.

Carroll's theory challenges two long-accepted scientific concepts.

(1) That 459.6° below zero Fahrenheit is "absolute" zero, and (2) that the velocity of light, 186,300 miles a second, is the ultimate ceiling for speed theoretically attainable.

When the "cold" nuclear power which he envisions becomes available, the velocity of light can be exceeded by a rocket powered by refrigerated atoms!

U.S.A. Air Force, we are pleased to report, has agreed to conduct an experiment, along lines proposed by Carroll, into the nuclear effects of extremely low temperatures.

Proposed process is the exact opposite of atomic fusion as exemplified by thermonuclear explosion. Fusion requires intense heat.

As an atom gets colder and colder and becomes less active, its electrons gravitate toward the nucleus and, at the same time, are forced by this constriction to move faster and closer.

When an atom becomes cold enough, its electrons plunge into the nucleus and disintegrate it, thus releasing the entire energy of the nucleus.

Get it? Neither do we. But we hope it works.

Short, But Oh My!

Who makes the best husband—tall man or a short man? That query recently was checked by an advertising agency. It was believed in advance that tall men would be the winners.

They lost.

Most women questioned preferred short men for spouses. They said that shorter fellows were more appreciative, more generous, more considerate, and less conceited than elongated men. Also (it was reported confidentially) they are more accomplished lovers!

Story of the Week

You'll never have to worry about this kid getting along in the world. Separated from his mama in a maze of supermarket aisles, he kept bawling for "Martha! Martha! Martha!"

That was his mother's name. On the double she ran to her little boy.

"Honey," she admonished, "you shouldn't call me 'Martha.' I'm 'Mother' to you."

"Yes," he stoutfellowed, "but this store is full of mothers, and I wanted mine."

. . . I can get just the fin spacing, tonnage and CFM I want."

Now, Halstead & Mitchell gives you a choice of 6, 7, 8 or 10 fins per inch . . . makes it much easier to match a central fan-coil unit to a particular job or to meet specifications.

And look what else H&M offers: a selection of three coil face areas for each model; direct expansion or chilled water cooling coils (1 to 8 rows); hot water, standard steam or non-freeze steam heating coils (1 or 2 rows); cooling capacities of 3 to 92 nominal tons with 880 to 47,750 CFM; Turbu-Flo coils arranged for right or left-hand connections; horizontal or vertical mounting for discharge in any direction . . . and every accessory item you need to simplify your installation.

Why don't you check H&M Central System Air Conditioners? Call your wholesaler or write for Bulletin AHU-100. Halstead & Mitchell Co., Dept. H105 Bessemer Bldg., Pittsburgh 22, Pa.

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AIR HANDLER

HM Halstead & Mitchell

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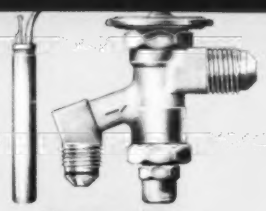
BASIC for Cooling and Heating

Refrigeration, air conditioning and heating men searching for components to act as nerve centers for their products and air-handling systems are sure to appreciate the value of these American-Standard Controls Division products. This also applies to anyone who must control or indicate the pressure or temperature of gases and/or liquids.

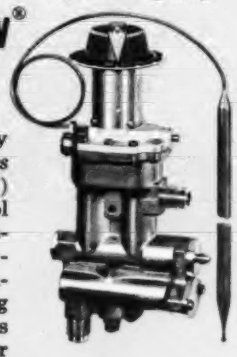


Detroit® Expansion Valves

Longer life, smoother operation, fewer moving parts, unrestricted refrigerant flow—these are the plus benefits ASCD builds into its expansion valves. Advantages such as these come only from years of manufacturing experience and constant research. Capacities range from .5 to 25 tons for R-12 and .8 to 32 tons for R-22. Specify them by name next time you order.

AMERICAN-Standard
CONTROLS DIVISION

Selectaflow® Controls

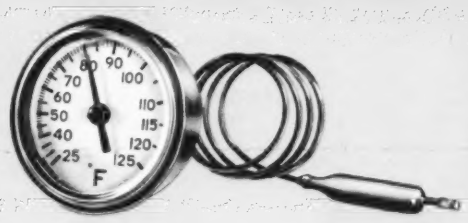


Here is a completely self-contained (*saves installation costs!*) thermostatic control valve specifically designed for year-'round air conditioning systems using hot or cold water as the heat transfer medium with single supply and return lines. Selectaflow controls are available in direct operating or remote control models, for fan and coil units up to 600 C.F.M. Next time specify Selectaflow.

AMERICAN-Standard
CONTROLS DIVISION

AMERICAN-Standard
CONTROLS DIVISION

You can get detailed information on any of these products by writing American-Standard Controls Division, 5900 Trumbull, Detroit 8, Michigan.



Remote Reading Thermometers

There are practically no limits as to the specialized applications for Rochester thermometers. This remote reading thermometer is hermetically sealed, is available in a wide variety of ranges and capillary tube lengths.

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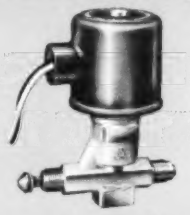


Detroit Solenoids

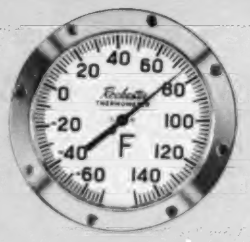
Detroit solenoids are designed to provide long operating life under the most rugged conditions. They are available in sizes ranging from ¼″ through ⅝″ SAE; ¼″ through 1⅜″ OD; ¼″ through 1¼″ F.P.T. Positive shutoff, quiet operation and easy installation are among the features. To be sure of top quality always insist on the refrigeration and air conditioning products manufactured by American-Standard Controls Division.

AMERICAN-Standard
CONTROLS DIVISION

Detroit™ Driers

Moisture and acid-free refrigeration and air conditioning systems are assured with American-Standard Controls Division driers. Backed by years of experience these units are designed to give positive moisture control. They are available in a wide range of sizes, types and capacities. Ask for them by name—next time you order.

AMERICAN-Standard
CONTROLS DIVISION



Industrial Thermometers

Rochester bimetal industrial dial thermometers provide extreme accuracy, are hermetically sealed and can be externally calibrated. Available in standard dial sizes from 1″ to 5″, and with scale ranges from minus 150°F to 1000°F.

AMERICAN-Standard
CONTROLS DIVISION

Detroit Moisture Liquid Indicators

With these Detroit Dri-Dot™ Moisture-Liquid Indicators in the line, one fast glance is all it takes to tell if the system is dry and fully charged. Large, optically clear sight glasses plus highly reflective interiors instantly reveal any shortage of refrigerant. Moisture sensitive elements use color to indicate system changes in moisture contamination. Line sizes are available from ¼″ through ⅝″ flare and ¼″ through 2⅛″ solder connections. For positive moisture control always specify American-Standard Controls Division indicators.

AMERICAN-Standard
CONTROLS DIVISION

C. W. Lockhart

L. A. Macrow

R. C. Niess

J. F. Tobin

Lockhart Elected AMCA President

GREENBRIER, W. Va.—The election of Charles W. Lockhart to the post of association president has been announced by the Air Moving & Conditioning Assn., Inc.

About 130 AMCA members, representing 70 manufacturers of air moving and conditioning equipment, held their seventh annual meeting here to outline plans for 1962 and elect new officers and board members.

The association approved the adoption of a recommended practice covering the measurement of sound in fans and air conditioning devices. Previously AMCA has provided manufacturers and purchasers of air moving and conditioning equipment with standard test codes that set uniform test methods for performance ratings.

Lockhart, replacing Robert W. Krogstad as president, served several terms on the board of directors. He has also been active in association work and has served as chairman of both the Centrifugal Fan Div. and the AMCA Steering Committee. Lockhart is currently vice president in charge of sales for Buffalo Forge Co.

Other officers named:

Vice president, L. A. Macrow, chief engineer, Carrier Air Conditioning Co.; vice president, R. C. Niess, manager of product sales, York Div., Borg-Warner Corp.; secretary-treasurer, John F. Tobin, vice president of marketing, American - Standard, Industrial Div.

The following new board members were elected:

Marc McGuire, division manager, Utility Fan Corp.; Robert E. Parker, vice president and chief of research, Ilg Electric Ventilating Co.; Geoffrey G. Workinger, vice president of sales, McQuay, Inc.; Robert A. Wasson, president, Clarage Fan Co.; William H. Rodgers, manager, Temper-Air Group, American Air Filter Co., Inc., Edward J. Stone, sales manager, Propellair Div., Robbins & Myers, Inc.; George V. Patterson, president, Swartwout Fabricators, Inc.

National AMCA headquarters are maintained at 2159 Guardian Bldg., Detroit 26, Mich.

American-Standard Using Molecular Sieves Beads In Filter-Driers

DETROIT — Use of the new Type 4A-XH molecular sieves beads in its filter-driers has been announced by the American-Standard Controls Div.

The move was made, the company stated, "to bring the greatest efficiencies and economies possible through a proved product of this type to the functions of drying, filtering, and acid removal in air conditioning and refrigeration systems."

The Linde - developed new desiccant was described in the Oct. 9 issue of the NEWS. A further discussion of the desiccant's reaction with Refrigerant-22 appears on page 12 of this issue.

Golden Gate, Sacramento ASHRAE Chapters To Meet Together Nov. 2

SAN FRANCISCO—The traditional joint meeting of the Sacramento Valley Chapter and the Golden Gate Chapter of the American Society of Heating, Refrigerating & Air-Conditioning Engineers will be held Thursday, Nov. 2, at Spenger's Grotto in Berkeley, it has been announced.

Golden Gate Chapter helped to organize Sacramento Chapter nearly 10 years ago. The joint meeting has been held every year since, one year in San Francisco, the next year in Sacramento.

Kenward S. Oliphant of San Francisco will speak on the new importance of noise in air conditioning including duct, fan, and pump noise. Oliphant is a consulting electrical, mechanical, and acoustical engineer.

Wm. K. Sprague Dies

BUFFALO — William K. Sprague, 61, founder and president of W. K. Sprague Inc., heating and air conditioning contracting firm, died recently in his home after a lengthy illness.

Handy & Harman Moves N. Y. Plant to Mt. Vernon

MOUNT VERNON, N. Y. — Handy & Harman, fabricator and refiner of precious metals, has announced the relocation of its New York plant from 82 Fulton St., New York City, to 525 Nuber Ave. here.

Modern and improved machinery has been installed in the new plant to facilitate production of a wide variety of karat gold alloys for manufacturing jewelers and industrial users.

Executive and general offices are at 850 Third, New York 22.

Series 219 without external range adjustment.
Series 219 space thermostat with range adjustment knob and integral air bulb.
Series 219 with external range adjustment.
LOOK WHAT'S NEW IN REFRIGERATION
TEMPERATURE CONTROLS
PENN
Series 239 has both external range and differential adjustment.

Now! Compact size, highly accurate repeat performance, plus other new sales features!

Here's a new line of small, compact, Penn refrigeration temperature controls which has a *wider range* of applications with *fewer models.* The Series 219 has a fixed differential while the Series 239 differential is adjustable. Rated at 16 Amps., these models feature extremely close differential, precision "repeat" accuracy, and are not affected by barometric pressure or cross ambient temperature problems. Extra features include built-in conduit fitting on Series 219, visible linear scale and small bulb size. Closed-tank fittings and bulb wells as well as built-in compensation for ambient temperature are also available. Learn more about these controls . . . write for Bulletin 3270.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Decomposition of R-22 by Molecular Sieves Appears To Be Practically Insignificant

The decomposition of Refrigerant-22 by molecular sieves: is it a practical problem? Several studies, both domestic and foreign, have indicated that there is some reaction between R-22 and the sodium alumino-silicate desiccant, but most authorities agree that the magnitude of reaction within an operating refrigeration cycle is practically insignificant.

In this report, Linde Co., Div. of Union Carbide Corp., present its findings.

•

It is well-known that R-12 and R-22 are remarkably stable refrigerants when heated in the absence of catalytic materials. Their stability can be greatly influenced, however, by the presence of catalytic materials such as the oils, metals, metal oxides, and desiccants normally present in a refrigeration system.

In view of the possible influence of molecular sieves on the stability of the refrigerant, sealed tube decomposition tests were run with molecular sieves, activated alumina, and silica gel.

Briefly, the test procedure consisted in contacting, in a sealed glass tube (5 mm I.D. x 150 mm long), a mixture of the refrigerant oil (see Table I) with the desiccant in the presence of steel and copper. The mixture contained refrigerant and oil in a 1:1 volume ratio and 15 ± 5 ppm water.

The desiccants were activated beforehand under the conditions prescribed by the manufacturer. The tubes containing a clean steel strip, copper coil, and desiccant were first partly filled with oil, evacuated, and then cooled in a liquid nitrogen bath.

The refrigerant was slowly introduced from a cylinder and allowed to condense until a volume equal to that of the oil was transferred. The tubes were then sealed and immersed in holes in an aluminum block and thermostated at temperatures of 150°F and 250° for periods up to 480 days.

Control tests were run in which either the desiccant or the oil was eliminated. All tests were run in triplicate.

After 30, 60, 120, 240, and 480 days, tubes were removed from the block, broken open, and both the solid desiccant and the liquid were analyzed for chloride.

Calculation of the per cent refrigerant decomposed was based on the assumption that decomposition was stoichiometric with respect to the chloride formed.

The chloride concentrations in the liquid and in the desiccant were determined separately using a method involving potentiometric titration with standard silver nitrate solution.

Table I

Physical Properties of Oil Used In These Experiments

Density, 20°C	0.9017
Viscosity, cs at 20°C	86.3
ssu at 68°F	400
Carbon Type % C_a	49
% C_o	2
% C_s	49
Molecular Weight	339

The data obtained for R-12 at 150° and 250° are given in Tables II and III. All three desiccants quantitatively removed the chloride formed at both temperatures.

The data obtained for R-22 at 150° and 250° are given in Tables IV and V. As with R-12, all three desiccants quantitatively removed the chloride formed at both temperatures.

The rates of decomposition with activated alumina and molecular sieves appear to be initially high, decreasing abruptly as the decomposition approached a maximum. In the presence of both desiccants, the amount of R-22 decomposed appeared to be a strong function of desiccant-refrigerant ratio as well as of temperature. In all cases, the chloride formed on decomposition was completely removed from the refrigerant by each of the desiccants tested.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Table II

Decomposition of R-12 and Oil at 150°F

	Lb of Desiccant, Refrigerant	Refrigerant Decomposed, % 30 days	60 days	120 days	240 days	480 days
Silica Gel	0.04	<0.01	<0.01	<0.01	<0.01	<0.01
Activated Alumina	0.04	0.09	0.09	0.09	0.10	0.08
Molecular Sieves	0.07	<0.01	<0.01	....	<0.01	<0.01
	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	0.01 no oil	<0.01	<0.01	<0.01	....	<0.01
No Desiccant	....	<0.01	<0.01	<0.01	<0.01	<0.01

Table III

Decomposition of R-12 and Oil at 250°F

	Lb of Desiccant, Refrigerant	Refrigerant Decomposed, % 30 days	60 days	120 days	240 days
Silica Gel	0.04	<0.01	<0.01	<0.01	<0.01
Activated Alumina	0.04	0.19	0.16	0.17	0.25
Molecular Sieves	0.07	0.10	0.14	0.20	0.31
	0.01	0.07	0.07	0.07	0.09
	0.01 no oil	<0.01	<0.01	<0.01	0.01
No Desiccant	....	<0.01	<0.01	<0.01	<0.01

Table IV

Decomposition of R-22 and Oil at 150°F

	Lb of Desiccant, Refrigerant	Refrigerant Decomposed, % 30 days	60 days	120 days	240 days	480 days
Silica Gel	0.04	0.01	0.01	....	0.01	0.01
Activated Alumina	0.04	0.15	0.19	0.17	0.19	0.20
Molecular Sieves	0.07	0.10	0.15	0.24	0.39	0.10*
	0.01	0.01	0.04	0.05	0.11	0.10
	0.01 no oil	0.01	0.04	0.05	0.01	0.07
No Desiccant	....	0.01	0.01	0.01	0.01	0.01

*This value is omitted from consideration because of its inconsistency with previous results.

Table V

Decomposition of R-22 and Oil at 250°F

	Lb of Desiccant, Refrigerant	Refrigerant Decomposed, % 30 days	60 days	120 days	240 days	480 days
Silica Gel	0.04	<0.01	<0.01	0.02	<0.03	0.05
Activated Alumina	0.04	0.30	0.23	0.30	0.22	0.32
Molecular Sieves	0.07	0.80	0.86	1.1	....	1.3
	0.01	0.21	0.12	0.19	0.18	0.23
	0.01 no oil	0.12	0.13	0.18	0.24	0.30
No Desiccant	....	<0.01	<0.01	<0.02	<0.01	<0.01

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Stop fumbling
with loose parts

Use a NEW Imperial
Hermetic Piercing Valve

No loose parts. No bolts or screws required to adapt this unique C-clamp type piercing valve to a line. Just slip it over the tube, tighten nut, turn setscrew and pierce the tube. It's quick and economical. Tap the line at any point for charging, testing or purging hermetically sealed units. Handles: 5/16", 1/4", 5/16" and 3/8" O.D. Ask for Imperial No. 342-C Hermetic Piercing Valve.

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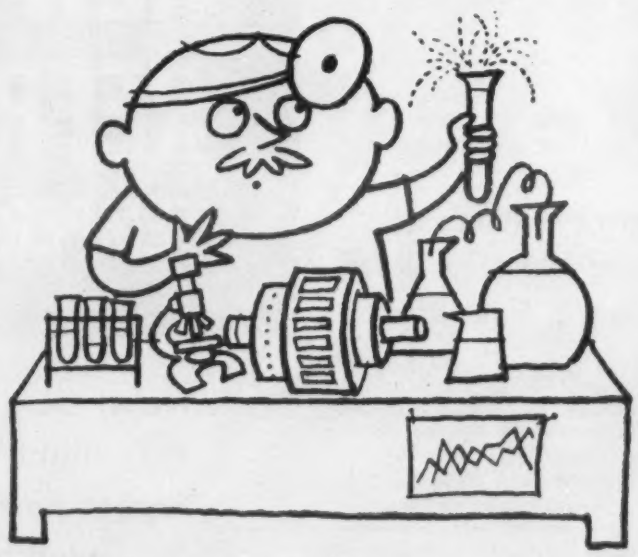

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In his laboratory, famed surgeon, Dr. Medic has proven completely that sufferers of Compressor-itus can find relief. His tests on hundreds of cases have shown his theory to be 100% correct. "I have dedicated my life to winning this fight. I think I have won."

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For High Temperatures

Refrigeration Oils 'Were Ready' Before Other Components In the System

By Frank J. Versagi

PHILADELPHIA — "In the development toward today's refrigeration systems operating at higher discharge temperatures, oils were actually ready before other components in the system. Instability of insulating materials, particularly, was a limitation. New insulation materials are coming which will tolerate high temperatures."

Such is the opinion of H. E. Tiffany, Industrial Products Dept., Sun Oil Co., who recalls that the reach for higher operating temperatures released moisture from cellulose insulation and spacers and other materials which contributed to oil breakdown, even though the oil itself was thermally stable.

When the refrigeration industry began producing units to attain lower and lower evaporator temperatures, the oils were already available, according to Tiffany. "Actually, we had developed oils with a -80°F floc point by 1949 or '50. These are primarily naphthenic oils which also lent themselves to the increasing use of Refrigerant-22, because they have desirable solubility properties with this refrigerant as well as with R-12."

Paraffinic Oils Still Used With Ammonia Systems

Paraffinic oils, the Sun Oil representative explained, are still used with ammonia systems, "because such units tend to operate with hot crankcases and there is a tendency for them to contain air." Oxidation of paraffinic oils is less severe under these conditions than would be the case with naphthenic oils. Therefore, varnish and/or sludge deposits due to oxidation are less. Also, scuffing of cylinder and piston surfaces is reduced.

The refrigeration industry went through the early *fifties* using available lubricants, but increasing the speed of its compressors and making the units more compact—both of these factors making for higher operating temperatures. "In cooperation with a major compressor manufacturer, we developed dual-inhibited oils for these severe conditions," Tiffany continued.

Copper Plating Problem

"The new oils are thermally stable and protect against copper plating. Copper plating has been a cyclic problem. It was a problem in the early days of refrigeration; it ceased being a major problem for a while; now it is appearing again as the units operate at higher and higher temperatures."

What about foaming?

"There are two schools of thought on foaming," Tiffany offered. "One school holds that foaming is not an oil problem, but is a problem in the design of the unit. This school would do nothing to the oil to reduce foaming. The second school holds that the oil should have an anti-foaming additive. Actually defoamers were available as far back as 15 years ago, and some unit manufacturers wrote anti-foaming oils into the specifications."

Oxidation Not a Real Problem

Oxidation is not a real problem in normal units, Sun Oil feels. "Actually the term *oxidation* is a misnomer used to designate the formation of any breakdown products of the oil. If a system employing fluorocarbon refrigerants has enough air in it to cause actual oxidation, it is in real trouble and the breakdown of the oil will only be an incidental problem."

Acid formation has often been cited as the prime cause of copper plating and oil breakdown, the NEWS commented. Commonly, it is thought that only inorganic acids such as hydrochloric are really serious in this regard and that organic acids, likely to occur in lubricants, are not really harmful.

"This is only partially true," according to Tiffany. "Organic acids are formed in oils through oxidation. When no oxygen is present, no acids form from the oil. The types of organic acids formed in paraffinic oils are more corrosive than those formed in naphthenic oils. An acid number of 0.50 in a paraffinic oil can mean trouble; an acid number of 2.5 in a naphthenic oil need not be a problem." And there are still a couple manufacturers of domestic refrigerators who use paraffinic oils.

Thermal degradation is the problem at higher discharge temperatures. What are the problems with oils at low evaporator temperatures?

Problems at Low Evaporator Temperatures

"As you go down in evaporator temperature, you become prone to two problems: first, a tendency of the oil to drop out wax-like substances; second, the tendency of the oil to phase out. In extreme cases, it is possible to have four phases—refrigerant and oil, oil and refrigerant, oil alone, refrigerant alone. Poor heat transfer and possibly poor lubrication is the inevitable result.

"While there have been cases where very large installations have operated with quantities of oils throughout the piping, these units have been using much more power than needed to do the cooling job. In other instances, the units have tended to heat up, rather than cool down when the evaporators contained excessive oil."

Sun leaves it to the designer to determine the proper layout of compressor systems. "Our job is to be expert in lubricants and their application."

The company has studied the many materials with which oils come into contact in a refrigeration system and has issued its recommendations of their compatibilities.

What is the oil of the future going to be like? What about synthetics?

"Remember that an oil's function is two-fold—to lubricate and to cool. The synthetics, for the time being at least, seem to be priced out of the market; they cost some 10 to 20 times mineral oils."

There are two schools of thought on miscibility of the *ideal* oil. Some hold that it must be completely miscible at all temperatures and pressures; others hold that it should be completely immiscible, so there will be no problem with phase separation at unwanted locations. Admittedly, this immiscible oil would lend itself best to large installations where mechanical oil trapping and storing can be accomplished.

"In cryogenics, present oils would seem suitable, although there would probably be a desire for lower viscosity at lower temperatures. You see, the difference in viscosity of a 150 SSU oil and a 50 SSU oil becomes of much less significance at -50°. (SSU is the measurement of viscosity—Saybolt Universal Seconds. The *rate* at which viscosity changes with temperatures is termed *viscosity index,* VI.)

"Presently available refrigeration oils are fully capable of handling foreseeable cooling technology. Nevertheless, we have our eye on the future."

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The Marley Company is pleased to announce the second award in its Customer Certification program—a 7-day trip to Miami with all expenses paid.

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Kansas City, Missouri

Editorials

Materials Si, Plastics No?

AS INDICATED by most of the articles in this issue, especially Tech Center, engineers are using more and more plastic materials in the design and construction of their products. This, in the face of steady, ever increasing, objection from many consumers.

Does this indicate a lack of concern on the part of engineers toward the end user? Not necessarily, we believe.

It is true that polyethylene dishpans crack in corners, that polystyrene toys deform when they get near a warm air register or radiator, that plastic components of refrigerators are usually the first to break, that plastic grillwork on packaged air conditioners tends to sag and distort.

However, it is also true that melamine dinnerware is a beautiful and functional addition to America's kitchen, that synthetic plastic fibers have revolutionized the clothing industry, that plastic insulation materials have increased the temperature range and life expectancy of motors, that plastic films, foams, beads, fibers, are finding increasing functional and legitimate use in the products of all industries.

No amount of accelerated life testing, laboratory investigation, even field testing, can predict what will happen to a product once it is actually being used generally. The best way in the world to determine if a plastic toy is unbreakable is not to subject it to 4,000-lb impact tests, but to hand it to a 70-lb kid.

Overlooking the obvious unconcern of some operators who use reprocessed materials, degraded resins, and fabricate deliberately shoddy, low-priced products, there is now enough of a body of knowledge to allow the engineering implementation of plastics. More plastics are forthcoming; engineers would be failing in their duty if they did not attempt to apply these new products.

Inevitably, not all applications of plastics will be perfect. But, iron still rusts, cloth still rots, sometimes to the detriment of an otherwise good product. It would seem then that a slight amount of inconvenience is the price which consumers must pay as their share in the development of new and better products.

A New Set of Footprints

Dale Bodine is the new educational director of Refrigeration Service Engineers Society. He has a tremendous responsibility, for RSES is the only organization in the heating-cooling industry devoted entirely to continual training and education of servicemen.

Membership in the society has climbed steadily upward in the last few years; it now stands near 15,000. Undoubtedly, the existence of the RSES Study Course is a factor in this growth. Important, too, are the monthly educational meetings held by local chapters and the frequent regional, state, and national meetings.

Dale Bodine follows two highly respected men as educational director—the late Paul Reed and the late John Spence. We suspect Dale may be just a bit awed by their outstanding performances, and may be wondering how he will perform in comparison.

We have a suggestion for Dale: It isn't necessary at all to think of "filling Spence's shoes." Instead, Dale, create your own set of footprints. Reed succeeded because he was Paul Reed; Spence performed well as John Spence.

You do what seems natural and right for Dale Bodine.

With your background and your sense of dedication, you won't need luck, but Good Luck anyway.

Women are wiser than men because they know less and understand more.—*James Stephens.*

Let there be spaces in your togetherness.—*Kahlil Gibran.*

ON INDIFFERENCE

When Jesus came to Birmingham, they simply passed Him by,
They never hurt a hair of Him,
They only let Him die.—*Woodbine Willie.*

MORE PRAISE FOR WORLD TRADE ISSUE

Hupp International Div.
Cleveland

Editor:

I have been travelling and have not previously been able to reply and congratulate you on the wonderfully informative World Trade Issue of the NEWS on Aug. 7, which has provided food for thought for not only all of us in the industry but more important for our foreign distributors and dealers and customers who mean so much to us, not only in business relations but in the development of a better understanding between our friends of many lands, many races, and many colors engaged, together with us, in making the world if not a better place at least a more comfortable place to live in with air conditioning.

ROY SCANTLEBURY,
Vice President

●

Dunham-Bush, Inc.
Hartford, Conn.

Editor:

I read your Aug. 7 issue and I must say it is a very interesting issue.

It must have been a terrific task to put this particular issue together, and I am confident it will do you a lot of good.

CECIL BOLING,
President

Sherer-Gillett Co.
Marshall, Mich.

Editor:

Your Aug. 7 World Trade Issue accomplishes two mighty important objectives.

1. You have encompassed the whole segment of our industry with many date lines and many interesting stories, both of people and of technical information.

2. You have translated this information into sound economic trade relationship that in my estimation is an international diplomatic move that should bring us substantial dividends.

May we comment that more emphasis might be given to your proposed world trade issues at the diplomatic level as a method of securing more and better understanding at the economic level.

J. H. COOLIDGE,
President

●

Stiles Karlsonite Corp.
Waukegan, Ill.

Editor:

Congratulations on your special World Trade Issue of Aug. 7. I found it most interesting and informative.

FRANK A. CIANFLONE,
General Manager

Remington Corp.
Auburn, N. Y.

Editor:

To an old exporter like myself, your Aug. 7 World Trade Issue was really terrific!

Let's face it: Average Americans — including manufacturing executives — are not export minded. Yet it is increasingly apparent that we must export in order to prosper. And, in view of the trend of organized labor to price us out of export markets, coupled with the increasing know-how and sales effort of other nations, it is going to take a lot more export know-how and export mindedness to keep our exports rolling in the future than it has in the past.

That is why we here at Remington feel that your program to put out more World Trade Issues annually, henceforth, is so highly desirable not only for our industry but also for our nation.

In this connection let me say that in future World Trade Issues we would welcome more articles about other countries similar to the informative article in the Aug. 7 issue about India by Mohan T. Advani.

Best of luck in this worthwhile new undertaking for the industry.

HERBERT L. LAUBE,
President

'CUSTOMER WILL NOT BUY' GOOD INSTALLATION

General Electric
Tyler, Texas

Editor:

In your excellent newspaper, and particularly the Oct. 2, 1961 issue, the articles on air distribution have been read with interest.

These, and other articles, do bring a point to mind. In this industry, collectively, we know more about air distribution than any other industry group knows about one particular facet of their industry. The number of manuals, books, papers, layouts written on this subject is inestimable.

But, we who write these articles; give this good service; spend the time and money to do so, find that . . . in the final installation . . . much of this is ignored! I speak particularly of residential and "light" commercial installations.

The pressure for the "cheap and dirty" installation has become so acute that a dealer who wants to make an excellent air distribution installation finds that his customer will not buy it. The dealer's competition "cuts" out here, there, and soon it is priced many dollars below the original dealer's bid.

We've reached the point that dealers are afraid to bid a *good* air distribution job. Their competition is afraid to bid a *good* air distribution job! And the customer doesn't know the difference anyway, because his judgment is almost entirely influenced by dollars anyway!

There is no question in my mind that a good air distribution system can be made and installed. A couple of years ago, I completed a study entitled "Dollars Vs. Comfort," later to become a part of our Technical Training Manuals, and it just depends on how much money is spent to achieve the good air conditioning system. The customer gets what he pays for.

At this time, the air conditioning industry is the best-educated on air distribution of any industry—except we are *not* educating the customer on his need for a good air distribution system.

I'm not sure I know how to educate the customer to the value of a good air distribution system — but — I know nothing will relieve the mess we're in now unless this industry takes forthright corrective action in the reasonable future.

R. E. BALL

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

AIR CONDITIONING HEATING & REFRIGERATION NEWS
F. M. COCKRELL, Founder

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MOISTURE INDICATORS: *The Ounce of Prevention*

Moisture indicators, color-changing chemicals incorporated into liquid line sight glasses, have achieved a high degree of acceptance in just over five years of general availability. Servicemen, especially, were skeptical at first; some still are. But the use of moisture indicators is growing.

In this article, Ansul Chemical Co. describes the conditions which led to the need for moisture indicators and cites their advantages and limitations.

By John Bopp, Manager, Technical Services
Ansul Chemical Co.

What a contrast between the old open-type compressor days and the modern age of air-cooled, sealed and semi-sealed units! We used to say, "Old refrigeration systems never die, they just need a little workin' over." Put in a new valve plate, rework the bearings, wash out the compressor, slap in any old kind of a drier, charge and purge, and we were back in business.

Today, under the conditions where an open-type needed a little "workin' over" the hermetic is long gone with a burnout.

We have learned the hard way that an ounce of prevention can be worth four or five hundred dollars—the cost of replacing a burned out compressor and cleaning up the dirty, acidic system.

As far back as the late thirties we recognized that moisture was a problem which required close attention and was one which would grow in importance as the general use of sealed and semi-sealed units increased.

Need Seen for Moisture Indicators

As the number of failures due to burnouts increased, it was apparent in the early fifties that the field had to have a means of telling when a system was dry. Moisture problems had reached the critical stage for two reasons. First, a high percentage of the units going into the field were some type of hermetic with a chemically sensitive electrical system involved in the refrigeration circuit.

Secondly, Refrigerant-22 came into its own with the field not understanding its properties. Many today still don't understand that Refrigerant-22, pound for pound with the same moisture content, is more difficult to dry than Refrigerant-12 and much more desiccant is required to do the job. This is true because of the very great water-holding capacity of R-22.

For example, at 80°F Refrigerant-22 can hold approximately 1,350 ppm while at the same temperature Refrigerant-12 can hold only 100 ppm. The safe working ranges for these refrigerants in the field are generally accepted as 0-10 ppm for 12 and 0-25 ppm for 22.

The capacity of a physical-type desiccant, such as activated alumina, is high at high relative humidities and low at low relative humidities.

The safe end point in R-12 generally is around 10% relative humidity at which point the desiccant may have a water capacity of 15% by weight. At 25 ppm in 22, the relative humidity is 2% or less and the desiccant can hold perhaps 5% water by weight. Thus, about three times the amount of desiccant is needed to do the same job with 22 as is needed with 12.

Men in the field were, and for a large part still are, using the same amount of desiccant for 22 as they have been using for 12, with the result that the 22 systems are not dry and the failure ratio is much higher than 12. They assumed the R-22 systems were dry because they had no way of knowing they were still wet. Freeze-ups at the flow control are almost unheard of with 22 because of its great water-holding capacity —for example, 224 ppm at -10° as compared with 6 ppm for Refrigerant-12 at the same temperature.

The field needed a way to tell whether a system was dry. Recognizing the need, Ansul marketed its first moisture indicator under the trade name "DRY-EYE" in 1954. This indicator was designed for Refrigerant-12 and for Refrigerant-11. The same indicator is still in used today for these refrigerants. It shows the deepest blue at about 5 ppm in R-12 or R-11 and goes completely pink at less than 20 ppm, thus meeting the need nicely for these refrigerants.

We realized that it was only an adaptation for R-22 and said so. To use it with R-22, the user had to dry until he saw the first blue color and then, in addition to the desiccant already used, put in more desiccant equivalent to one cubic inch per pound of refrigerant charge. Many recommendations for this type of indicator with R-22 do not mention this vital extra desiccant with the result that the indicator gives a false picture of dryness.

Seeing the need for a truly specific R-22 indicator, in 1956 Ansul introduced one which changes at 1.3% relative humidity, giving a change point of 12-14 ppm at 80° in 22, and a change point of 18 ppm at a normal commercial liquid line temperature of 90°. The indicator shows green when dry and pink when wet with almost no intermediate color changes. In 1957, Ansul put both elements in a combination sight glass and moisture indicator.

The need for separate elements is shown clearly by these examples: At 90° commercial liquid line temperature, the R-12 element in R-22 shows dry at 90 ppm and wet at 270 ppm while the true 22 element shows dry at 18 ppm and wet at 38 ppm—genuine control. At 110° (residential air conditioning liquid line temperatures) the R-12 element shows dry at 130 ppm and wet at 350 ppm while the true 22 element shows dry at 25 ppm and wet at 50 ppm—again positive control.

It is very apparent from OEM and field usage that the moisture indicator is fast replacing the plain sight glass. It is assuming its rightful place as the most helpful aid to prevent failures that has been developed in recent years.

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AIR CONDITIONING • HEATING • REFRIGERATION

What's New In Materials

With the emphasis in this issue being placed on modern materials in air conditioning, heating, and refrigeration, the NEWS' usual What's New section is being devoted to developments in the field of materials.

Dual-Durometer Extrusion Offers Lower Initial Cost, Fewer Service Problems

MIDDLEFIELD, Ohio — One-piece rubber extrusions combining longitudinal sections of two different hardnesses are announced by Geauga Industries.

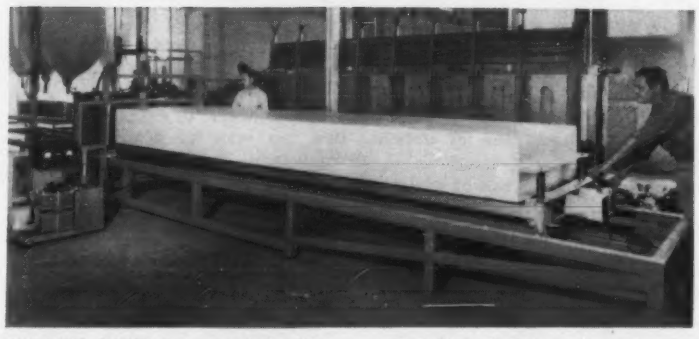
Made possible by a unique extrusion development, the one-piece hard-soft sections are said to be especially adapted for refrigeration equipment and other appliances, door seals, weatherstripping, and moldings. Seals incorporating the hard-soft extrusion utilize the soft rubber of desired profile to meet the actual sealing requirement with a hard rubber foot for mounting to an adjoining surface.

"From a value analysis standpoint," the company said, "the new dual-durometer extrusion offers the advantage of lower initial cost, elimination of ordinary sub-assembly operations, facilitated assembly of the seal in position, plus elimination of service problems.

Duct Liner Adhesive Is Non-Flammable

DANVILLE, Ill.—"Tuff-Bond #6," described as a non-flammable fire-retardant duct liner adhesive which meets Interim Federal Standard #00136 is being offered by Goodloe E. Moore, Inc., here.

Tack time is given as about six to eight minutes, thermal range as 20° to 250°F, and coverage as approximately 150 sq ft per gallon.



HOT-WIRE CUTTER for expanded polystyrene and rigid or flexible urethane foam is tested at the Boca Raton, Fla. plant of the Dura-Tech Corp., manufacturer of steam-chest mold and wire cutters. James E. Becker, president, and R. C. Burkhardt, plant manager, start a billet measuring 16¾ in. by 48 in. by 16 ft 6 in. through the cutter that has wires positioned vertically and horizontally giving a width and thickness cut simultaneously to an accuracy of .015.

Flux Allows Soldering of Rare, Difficult Metals; Provides Extra Strength on Ordinary Metals

PHILADELPHIA — Pointing out that the development of new metals creates a constant need to improve fluxing action, Farrelloy Co., 1264 N. 26th St., Philadelphia 21 Pa., said it has an answer to much soldering difficulty—"Nika," a new flux, and "Nika #40," a new multi-alloy solder.

"With this combination rare and difficult metals, such as molybdenum, nickel, and chromium, are easily solderable; and, there is the additional advantage for those jobs requiring extra strength on ordinary metals," the company said.

"This combination that works on the difficult metals makes for a deeper surface penetration, stronger bond, and higher tensile strength on the common metals such as stainless steel, copper, brass, steel, etc.

"Nika #40 Solder gives a sheen with a close fine grain. It loses nothing in ductility and yet it is not too hard for working with a machinist scraper. Nika #40 accepts cadmium and nickel plate and, if desired, will solder to aluminum. Asmc Liquid Flux is required with Nika #40 for soldering aluminum."

Aluminum Coat Allows Vulcanizing to Rubber

RICHMOND, Va.—Aluminum sheet and foil now can be permanently vulcanized onto rubber, yielding a material combining the surface toughness, corrosion resistance, and insulative values of aluminum with the flexibility of rubber, according to W. G. Reynolds, executive vice president in charge of research for Reynolds Metals Co., Richmond 18, Va.

The process, which has been proved feasible through commercial application, is made possible by a special aluminum coating developed by the Reynolds Packaging Research Div., Reynolds said. Projected applications for the aluminum-vulcanized rubber include flexible aluminum-covered pipe and tubing.

Reynolds applies the coating to the metal and ships it to customers in roll form. When the rubber is vulcanized, the aluminum becomes an integral part, "as difficult to remove as the tread on an automobile tire."

Eco-Bond '61 Solders Aluminum to Itself

ELMHURST, N. Y. — "Eco-Bond '61" rod, which reportedly solders aluminum to itself without flux, is being offered by Paraco Metals, Inc., 45-02 83rd St., Elmhurst 73, N. Y.

"New products, improved designs, and repairs," the company said, "are now made possible with this new concept in aluminum fabrication — works equally well on galvanized sheets and parts. No flux is required.

"Application is simple: (1) Pre-heat the aluminum or galvanized sections with a torch until they are hot enough to melt the Eco-Bond '61 alloy (approx. 717°F). (2) Rub the Eco-Bond '61 rod in the joint area. Wetting takes place easily and a strong fillet is quickly formed. (3) Allow the fillet to set."

Kit Educates Layman On Plastics Applications

BARRINGTON, N. J. — A Plastics Engineering Set to provide essential knowledge of the fast-growing plastic industry is now available from the Edmund Scientific Co.

The kit was designed to give non-technically trained people in business a working knowledge of plastics fabricating and applications, so that they can evaluate and compare them.

The kit measures 15 in. by 6 in. by 11¾ in., and includes a detailed, non-technical instruction manual. Full price, $25 postpaid. It is available from Edmund Scientific Co., Barrington 62, N. J.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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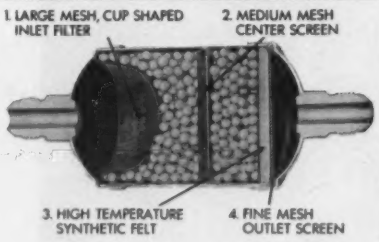
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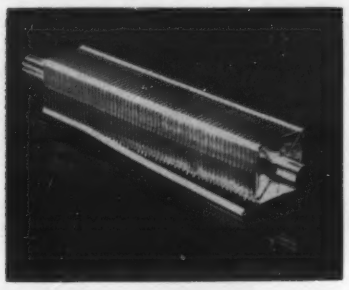

Poly-Pro Tracks Cut Fin Damage, Noise

KANSAS CITY, Mo.—A baseboard element with a special design incorporating four tracks of tough, heat-resistant polypropylene is a product of Embassy Industries, Inc.

A major reduction in "Panel Track" element damage during shipment is due to the fact that the "Poly-Pro" polypropylene track securely clipped on each corner of each fin gives the element a rigid and rugged box-like structure, according to Spencer Chemical Co., Dwight Bldg., Kansas City 5, Mo. When unpacked following shipment, this boxlike ruggedness also means that much less care is needed to prevent cut hands and the metal-to-metal fin contact that contributes to heating inefficiency, it was stated.

Also, there is reportedly an "absence of expansion and contraction noise from the element since the tracks also serve as an effective sound damper."

Thread Sealer Resists Chemicals

PHILADELPHIA — A thread sealing compound, claimed to have "remarkable properties and chemical resistance," was recently developed and put into production by the Flexrock Co., 2417-P2 Federal St., Philadelphia 1, Pa.

This new material is designated "Flexrock 25, TEFLON Pipe Dope." It is recommended for use on chrome, chrome plate, nickel, steel, ceramic, and plastic pipe threads, and for joining or connecting dissimilar materials.

"The excellent lubricating qualities of Flexrock 25 prevent galled threads and permit easier pipe joining, that can be readily dismantled even after long periods of exposure to the most rigorous conditions," the company stated.

Prevents Paint Peeling On Galvanized Surfaces

BENSENVILLE, Ill.—A new product called "Top-Galva" has been announced by Rip-Trude Corp., Dept. 101, 110 Gateway Rd. here.

Top-Galva is a metallic solution which, when sprayed, brushed, or dipped on galvanized metal, forms a union with the zinc and deposits on the zinc a non-corrosive, non-chipping coating, the company pointed out.

"This coating," it was stated, "provide a tenacious paint adhesion surface and completely eliminates the chipping, peeling, and blistering commonly found on painted galvanized metal surfaces," it is claimed.

Hydro-T-Metal Said To Be Suitable for Climate Control Ducts

MINEOLA, L. I., N. Y.—A new alloy that is claimed to equal or better copper in a variety of exterior uses, and is less expensive, has been tested and approved by the Research & Development Program of the Climate Control Council, according to Joseph Frederick, president of Sheet Metal Workers Union, Local #55, and chief labor member of the council.

Called "Hydro-T-Metal," the building material is an alloy of titanium, copper, and high-grade zinc, with traces of manganese and chromium, which has "overcome the weaknesses in other zinc-rich alloys," it was stated. It was developed by Hydrometals, Inc., U. S. mining and metals company.

The sheet metal has been tested for a number of uses, including climate control ductwork. It "has been found to do as good a job, and often better, as metals previously used."

Frederick said Hydro-T-Metal has the excellent corrosion resistance associated with zinc-rich alloys and the structural strength and stability of other non-ferrous alloys.

Ease with which Hydro-T-Metal will take a severe bend in elbow for a downspout is demonstrated by Albert A. Sikula (right), Hydrometals sales manager, to sheet metal worker, Frank Stancavage (second right). Watching are Woody Jensen (left), Hydrometals architectural sales engineer, and Edward Klein of H. Klein & Sons, Inc., in whose Mineola shop Stancavage is employed.

The alloy is said to have a high yield point and a tensile strength in the same range as copper.

In another announcement, Hydrometals said its European affiliate, Hydrometals S. A., in Brussels, reported that the Belgian government has approved the use of Hydro-T-Metal in all public construction.

What's New In Materials

One-Shot, Fire Retardant, Rigid Polyurethane Bows

NORTH TONAWANDA, N. Y.—"Hetrofoam 250," a one-shot, rigid, fire-retardant polyurethane, has been introduced by the Durez Plastics Div., Hooker Chemical Corp., 5100 Walck Rd. here.

Because of lower costs and technical versatility, Hetrofoam 250 "opens many new avenues for rigid foam applications," according to the company. Features are listed as including heat stability, dimensional stability, low water absorption, low moisture permeability, and low thermal conductivity.

(More New Materials on next page.)

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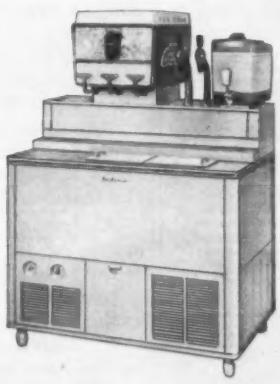

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Dispersives Minimize Adherent Sludge In Boilers, Cooling System

PITTSBURGH—A family of organic dispersives specially formulated to minimize adherent sludge formation in boilers and recirculating cooling systems has been introduced by Hagan Chemicals & Controls, Inc., Water Chemical Sales Div., Hagan Center, Pittsburgh 30, Pa.

The dispersives are dry powders specially blended to cover a wide range of dispersing properties.

"Selection of a dispersive is based on both physical and chemical examinations of deposits," it was explained. "For instance, in choosing a dispersive for use in a boiler, these samples are needed: (1) deposit from feedwater entry zone; (2) deposit from low velocity area such as mud drum; (3) generating tube deposit.

"For recirculating cooling systems one deposit and a circulating water sample are sufficient.

"It is suggested that boilers or cooling systems be cleaned before using Hagan dispersives since their prime role is preventive rather than the cleaning out of old deposits."

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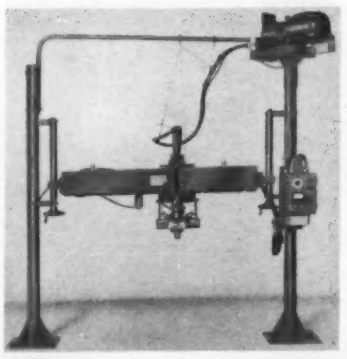

Offer Traverse Equipment For Foam Plastics

LOUISVILLE, Ky.—Polyurethane foam producing installations making rigid and flexible slab stock or pouring over large areas have need of traverse equipment for the foam dispensing device.

This was pointed out by The Martin Sweets Co., Inc., 3131 W. Market St., Louisville 12, in announcing that it now makes air-operated traverse mechanisms adjustable to height, stroke, and traversal rate.

"The rotary type, pneumatic prime mover assures smooth reciprocation through the natural cushioning of an air system," the company said. "Roller bearings support the carriage which cannot jam at the stroke limits, even if the limit controls are removed." the company has also announced a large model polyurethant foam mixing head. Up to six separate foam material streams can be valved into the mixing chamber for on-off operation, it was stated.

This development of the company is nominally rated at 100 lbs per minute and "now makes possible the pouring of large foam masses on shot-type, production installations."

Rigid Polyether Foam Systems Introduced

MINNEAPOLIS — Two new rigid polyether foam systems have been added to the regular line of "Pleogen" foam resins manufactured by the Mol-Rez Div., American Petrochemical Corp., Minneapolis 18, Minn.

Major advantages cited are: low velocity (1,000 cp.), for ease of mixing and flow; a built-in one minute delay for extended handling time; no heat cure required as ordinary curing will not produce brittle surfaces; no shrinkage after cool-down; superior dimensional stability, especially suited for refrigeration applications.

What's New In Materials (Cont.)

New Magnet Material To Give Motors New 'Heart'

CHICAGO—The synchronous timer motor, yeoman performer of myriad tasks in household appliances and other applications, soon will be equipped with a new "heart."

In this instance, the "heart" is a newly-developed permanent magnet material which has been put through a series of intensive life and manufacturing tests for the past year by Lake City, Inc., a subsidiary of Controls Co. of America.

Based on these tests and studies of field experience, Controls Co. soon will adopt the new magnet material for its entire permanent magnet motor line.

Developed by General Electric Co., the material, "Lodex," provides "a new standard of dimensional stability which is expected to further increase timer motor reliability," it was stated.

"The density of the new magnet substance, which is molded in a lead matrix, is greater than conventional magnets. Because of this it augments the weight of the flywheel effect and increases rotor torque. Due to the uniform stability and the greater predictability of magnetic strength inherent in the new material, torque output is increased by 10%.

"The high coercive force of the new magnet material makes it particularly resistant to stray magnetic fields which sap conventional magnet strength. The new magnet maintains its stability under high temperatures and is highly resistant to other de-magnetizing forces such as shock and vibration."

Waterproof Foam Adhesive Coating Bows

NEW YORK CITY—The Research Div. of Adhesive Products Corp., 1660 Boone Ave., New York 60, N. Y., has announced the development of "Visopox" waterproof foam adhesive and coating.

"Visopox is a 100% solids material, containing neither water nor solvents and is excellent for bonding polyethylene foam, polystyrene foam, and polyurethane foam to themselves or any other surface," the company said.

"Visopox, which combines the best features of epoxy and rubber, has the tack and quick-grab of an elastomeric adhesive with the strength of epoxies. It is permanently flexible, non-toxic, and superior to epoxies in that it will withstand temperatures of -80°F and has excellent bonding qualities at elevated temperatures as well."

Announce Improved Cold Galvanizing Process

BROOKLYN — To meet government requirements for new specifications, the "Galvicon" cold galvanizing process has now been improved, and contains over 97% pure electrolytic zinv in the dried film coating, according to Galvicon Corp., 20 Meadow St., Brooklyn 6, N. Y.

The company pointed out that "Galvicon" was one of the first zinc-rich coating introduced into this country in 1950. At that time, it deposited 95% zinc in the dried film coating.

"Galvicon," applied by brush, spray, or dip method, combines with the base metal and actually galvanizes the iron or steel, with the additional advantage that "Galvicon" actually bonds to the base metal, the company stated, adding:

"It is now possible not only to give mechanical protection, but chemical protection as well, on location or in the plant, without the necessity of dismantling, shipping, or interrupting operation."

Fibrous Glass Insulation Meets UL Standards

HICKSVILLE, N. Y.—A new thermal and acoustical insulating material made of high-density fibrous glass is now availabe to replace many combustible materials in home air conditioners and other appliances, according to Fibrous Glass Products, Inc., subsidiary of Pall Corp., Alpha Plaza here.

Called "Thermo-Mat," this material meets the flame resistance requirements of Underwriters Laboratory specification UL484, the company said.

"Thermo-Mat insulation is normally supplied in sheets ⅛-in. thick," the announcement explained. "It is coated on one side against moisture penetration with a fire-resistant asbestos fiber mastic. Adhesives are applied directly to the uncoated side for easy installation into component housings and appliance walls. The material is presently being used in place of combustible 'asphalt felts.'"

The fiber mastic coating, a formulation of Fibrous Glass Products, is available as a separate item in 5-gal. cans to increase the flame resistance of all insulating materials.

Plan To Market New Insulating Fiber Board

STOCKHOLM — Karlholms AB, which belongs to the Swedish Cooperative Union group of industries, reportedly planned to market a new-type fire-resistant heat and sound insulating mineral fiber board for building applications.

The material consists of diabase. This, mixed with slag, is heated to more than 1,000°C. The molten mixture is poured into a fast-rotating disc where the fine drops are split up into fibers by a steam jet.

The fibers are then elutriated in water and submitted to a special impregnation process. The fiber sediment goes to a sheet-forming machine, is dehydrated and dried, hardened, and cut into suitable sizes.

Flexible Aluminum Ducts Have 3¼ In. Diameter

ENGLEWOOD, N. J.—Flexible aluminum ducts covered with "Fiberglas" and neoprene are among major features of the "Jet-Cool" high-velocity central residential air conditioning system manufactured by Jet-Heet, Inc. here.

The ductwork, which winds its way through stud spaces, has an inside diameter of 2 in. and an outside diameter of 3¼ in. Aluminum for the system is supplied by Aluminum Co. of America.

Extremely cold air, which moves through the ducts at 625 fpm, is blended with room air for proper cooling and drying. Due to the heavy insulation on the ducts, no condensation forms, and the system is able to used a deeper coil for refrigeration, bringing the temperature down to 40°F, it was pointed out.

Adhesive Formulated For Industrial Use

BLOOMFIELD, N. J.—A 1:1-by-volume-mixture room-temperature-curing epoxy adhesive forumlated for high-strength industrial use, Bondmaster M666, has been announced by Rubber & Asbestos Corp., Dept. P, 225 Bellville Ave. here.

The new adhesive is a two-component system which is mixed in equal parts by volume instead of odd ratios by weight.

Bondmaster M666 Part "A" is colored cherry red. Part "B" is clear amber. The user mixes the two until the striations of color disappear and a uniform tint is achieved. At that point, the adhesive is ready for use.

Bondmaster M666 is a 100%-reactive, undegraded epoxy adhesive which has been formulated for industrial use. It is reported to differ substantially from the conventional highly filled compounds or solvent-dispersed products currently being marketed for householder applications.

"Fully cured metal-to-metal bonds produced with this new product, tested at room temperature using MIL-A-5090B procedures, yield up to 3,500 psi," the company said. "Bonds involving expanded styrene foam withstand 175°F for 200 hours without cell attack."

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TECH CENTER

by
FRANK J. VERSAGI

The Role of Materials In Progress

It is not coincidental that the great ages designating mankind's technological progress have been named after materials —stone age, bronze age, iron age. For the availability, or not, of suitable materials always has a direct bearing on the rate of progress of any technology.

As a specific example of this premise, consider the role of refrigerant, oil, motor insulation, bearing materials, on the performance of motors and motor compressors. Consider that some heat pump engineers are calling for a special refrigerant, a unique oil to solve some of the problems they have been unable to overcome by design alone.

These days, the big news in materials is plastics. These materials, most of which do not occur in nature, but are manmade, have crept into every facet of every industry. There are plastic dishpans and plastic components in intercontinental ballistic missiles. New insulation materials, both thermal and electrical, center around plastic formulations. Slowly, plastics are being accepted as structural and valid engineering materials, rather than being considered inferior substitutes for a conventional material.

In spite of setbacks, in spite of misapplication, indications are that plastics are here to stay and one prediction holds that the amount of plastics being used in such things as household refrigerators will double in the next few years.

In one sense a threat to metals, plastics offer the boon that in the face of inevitably reducing supplies of minerals, man-made materials can take up the slack. Du Pont's new "Delrin"—an acetal resin—is an example of a plastic material which can function where only metals were used before.

Plastic Insulation For Motors

From Gibson Refrigerator Div. of Hupp Corp., "a few years ago, the room air conditioner industry was plagued with fan motor burnouts because of poor quality of material in the motor which could not stand the high temperature and humidity conditions under which these motors are required to run. With new plastic insulation, this problem has been eliminated and we now have an electrical component that probably will last as long as the air conditioner itself."

C. V. Hill & Co., Inc., suggests that plastic materials have had a direct bearing on technological developments in the commercial refrigeration industry. The company lists "acrylic paint finishes for metal parts, improved paint finishes on air-cooled condensers, better K-factor in fiber glass insulation" as examples.

Plastics In Cooling Towers

The increasing use of plastics in cooling towers is another case in point. Considering the normal redwood deck material: certain fungi feed upon wood cellulose by breaking down its structure with enzymes. Cellulose, under optimum conditions of temperature and humidity, is converted into glucose. While some manufacturers have chosen not to replace the redwood with plastic deck material, almost all producers consider impregnating, treating the wood with materials which will reduce this fungi attack. And almost all these materials contain plastic formulations.

Foam-In-Place Thermal Insulations

The new foam-in-place thermal insulations, now approaching revolutionary acceptance by the cooling industry, are plastic materials. Fed into case linings, poured into masonry cavity walls, metered into small apertatures, this polyurethane material expands and seals and lends structural strength.

Rapid progress is occurring in the application of plastics for tools.

Other Types of Materials

While plastics is undoubtedly the dominant factor in new materials, improved conventional materials are also part of the picture. Some users suggest that better galvanized steel than is presently available, coupled with new paints, has resulted in end products which are at least 10 times better than previous products.

New desiccants, and new forms of older desiccants, have drastically altered the drier picture.

New solders, fluxes, and techniques every day increase the possibility that aluminum will find increasing application in the heating-cooling industry.

Moisture indicators, which indicate whether refrigerant circulating in a system has a safe level of water content, depend upon newly developed indicating materials.

Improve Cleanliness, Storage Stability Of Heating Oils

PHILADELPHIA — The steady improvement in cleanliness and storage life has been the news in fuel oils this past decade. "Normal #2 oils are reaching the bottom specs of a #1 oil," boasts A. L. Anderson, assistant manager, Fuel Oil Dept., Sun Oil Co.

"Gravity, viscosity, color, dryness are all such that fuel oils may be stored over a year, on the customer's premises, and still provide good service under low firing rates."

Moisture has always been a problem in fuel oils, Anderson explained. The moisture would tend to clog filters, catch any sludge in the oil, and finally block filters entirely. Refiners and marketers have placed added emphasis on drying the product before shipment ("here at Sun we use salt driers") and using filters and coalescers in all bulk plant loading lines.

One other major problem in the past has been *copper gel.* Sulfur-bearing fuel oils, passing through copper lines, would attack the copper and form a gel which would block the normal ¼ and ⅜-in. lines. New refining processes, especially *hydrotreating,* have reduced sulfur levels in fuel oils to a point where copper gel is no longer a problem, Anderson stated.

The Sun Oil executive pointed out that, in spite of increased competition from gas and electricity, fuel oil sales are increasing about 2% per year.

Owens-Corning Technical Center Dedicated

GRANVILLE, Ohio — Research scientists from many parts of the nation assembled here recently to participate in the dedication of Owens-Corning Fiberglas Corp.'s new multi-million dollar Technical Center to Games Slayter, glass fiber pioneer.

The dedicatory address was delivered by Dr. Frederick Lawson Hovde, president of Purdue university, from which Slayter received his chemical engineering degree in 1921. A commemorative plaque honoring Slayter was installed near the Technical Center entrance. Other speakers on the program were Harold Boeschenstein, Fiberglas president, and Dr. August C. Siefert, Fiberglas director of research.

The dedication program also included an extensive tour of the new research facilities and explanations of latest scientific advancements in the fibrous glass field.

Some 240 scientists, engineers, and technicians work in seven buildings housing laboratories for glass, chemical, physical, mechanical, and metallurgigal research; reinforced plastic development, product testing, acoustical research and a Pioneering Laboratory for advanced studies on new products and processes.

Known as the "Father of Fiberglas," Slayter has to his credit more than 135 patents, most of which were received within the past 30 years as a result of glass fiber research. Slayter, who is vice president, research, for Owens-Corning, directs the firm's Pioneering Laboratory.

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Polyurethane Rigid Foam Currently Making Better Products Possible

By J. P. Sellick, Business Development Planning, Nashville Div., Avco Corp.

Too expensive. . . . Hard to control. . . . Unreliable . . . were some of the overshadowing remarks reflecting the general thinking of manufacturers in the middle 1940's when discussing the uses of polyurethane rigid foam in their product application.

Granted, some of those early convictions had some basis of truth since experimental projects evolving from World War II were tried on production items late in the 40's and resulted in some very dissatisfied users of the products offered.

The picture has since changed and even those people who had experienced dissatisfaction in the earlier formulations are showing keen interest in polyurethane's physical characteristics and its numerous applications especially where the strength to weight ratio is an important feature.

In fact, during the last few years, more and more companies are finding a real place for urethanes where design criteria requires a more competitive product using highly insulative materials in strong, lightweight form.

This growing interest has prompted the chemical industry to take a serious look at high volume production of the urethane ingredients. Several of the companies are presently spending millions to build production facilities to meet an expected U.S. industry usage of over 500 million pounds of foam by 1968.

Variety of Formulations

Foamed polyurethane, available in a wide variety of formulations, is applicable to virtually every kind of product from airplane wings to cushion material. The secret of its success, however, lies in the method of applying the liquid ingredients. Usually the decision to spray, pour, or inject in the cavity or on the surface of the object foamed will depend entirely on the desired results.

The methods of applying polyurethane vary in as many ways as there are applications for this exceptional material and, contrary to general opinion, it can be purchased in rigid slab stock to be applied much like the foam styrene panels offered today. For the most part, however, fabricators prefer to spray or pour their own material, commonly referred to as "foaming in place."

This method takes advantage of the bonding characteristics of the material and makes it possible not only to seal or add rigidity to irregular objects, but allows the fabricator to join other materials in "sandwich" form without the need of adhesives.

In fact, the added strength produced by this method makes it possible to reduce material gauge thickness as much as 50% where metal surfaces are joined by foaming in place polyurethane in lieu of conventional internal structure and insulative batting used in the production of insulated enclosures.

The rigid urethanes themselves are not considered a structural material in densities less than 10 lbs unless special shapes are introduced with a densified surface. In these heavier densities, however, the material loses much of its insulative value.

The solution to this comes in the method of applying the foam either by spraying or pouring-in-place to other materials. For example a 2 x 8 board made of 2 lb. (per cu ft) rigid foam foamed-in-place between two thin layers of plywood or metal makes an extremely rigid "sandwich" offering strength characteristics many times the foam itself and offering superior insulative values.

Reports are continually being published that show competitively priced, lighter weight, and more efficient products are being fabricated at an ever increasing rate with the use of urethane foams through product adaptation and design.

30% Cost Reduction Cited by Manufacturer

One outstanding example of product application was related to me by an official of a prominent milk cooler manufacturer who saved 30% of the cost of producing the product by reducing the gauges of steel in the outer and inner shell of the tank by foaming in place with 2 lb polyurethane. The supporting structure and hardware, as well as the labor to install this and conventional insulative batting, were all but eliminated by the foaming in place of a tank-within-a-tank with polyurethane. . . . Thus, a better product, a more efficient product. . . . FOR LESS MONEY! (I have stated "more efficient" in that 1 in. thickness of this foam is equivalent in insulative value to nearly 2½ in. of the material he was using!)

Reference has been made to "2 lb" foam as an ideal density for rigid sandwich applications having both high strength-to-weight ratio and superior insulative value. Since urethane uses reach as far as the imagination will allow, contingent on the method of application, formulation, and density required, it become a necessity to restrict this review to rigid foams of 2 to 3 lbs per cu ft densities. This density range offers the best characteristics for the insulative, high strength requirements.

Keep in mind, however, that urethanes can be produced with basically the same formulations in densities ranging from ½ lb for flexible material for insulative clothing to approximately 70 lbs for structural shapes such as aircraft propellers, chair legs, framing, and the like.

Physical Properties of Newer Urethanes Listed

Newer urethane foams can now be obtained that are fire resistant, waterproof, unaffected by gasoline and oils, fungus and vermin proof and transparent to radar frequencies. They have proven to be quite stable and will not deteriorate or shrink with age or exposure to extreme temperature changes. Further details of its physical properties are outlined in Table I.

Polyurethane rigid foam described in the table is produced by the joining of at least two reactive liquid chemicals; a polyol and an isocyanate. The polyol can be of either polyester or polyether. The isocyanate plus other additives create the foaming and curing rate.

Anyone can make his own batch of rigid foam by merely mixing the proper proportion of liquid (much like two kinds of molasses) in a small paper cup. But, look out . . . depending on the type mixture, it will more than likely grow up to 30 times its original volume right before your eyes!

While the material is in the foaming process, it is extremely sticky and will adhere to virtually any kind of material with exceptional strength. In a few minutes, however, it becomes quite firm, and with a few hours of curing it becomes a rigid closed-cell material.

Hand pouring can be done with some degree of success where small portions are being made on a lab basis, but when foaming on a larger scope, special foaming equipment is required. Since proper formulation, temperature control, and other variables are important to obtain the desired results, dispensing equipment with a metering device is required for most production jobs.

There are a number of just such equipment manufacturers in the United States that can furnish your needs to either spray or dispense from 2 to 100 lbs of urethane mix per minute. This equipment, ranging in cost from $1,500 to $15,000, consists of two tanks, one for the polyol and one for the isocyanate bearing material, fitted with metering devices set to deliver the proper proportions of liquid to the high speed mixing head where the material is joined and the chemical reaction begins.

Foaming in place is not as complicated as it sounds, and the results you get will open new horizons for your product design group. In reality, it may make it possible to offer your customers a better product at less manufacturing cost.

A few examples of manufacturers' successes in the uses of foamed urethanes can be cited where product development has made decided effects on the overall industry. Foam sandwich containers for the transportation of frozen items has gained national recognition as an inexpensive means of maintaining temperature requirements of

TABLE I

Typical Physical Properties of Rigid Polyurethane Foam (Density 1.9 Lbs Per Cu Ft)

Compressive yield strength, psi	40.6
Compressive strain, psi, %	7
Elastic modulus, compression, psi	849
Tensile, ultimate, psi	68.4
Tensile, strain, %	8
Elastic modulus, tension, psi	1,489
Shear, psi	30.5
Elastic modulus, shear, psi	301.4
Water Absorption lb water/sq ft of exposed cut surface	0.098
Closed cells, %	89
Open cells, %	8
Cell walls, %	3
Flammability Burning rate in./min	4.04
Thermal Conductivity, (1) M. T.=75°F Btu/hr sq ft °F/in.	
initial	0.107
one year aging	0.112

(1) Aged specimens cut from panels with metal substrates.

Courtesy Thiokol Chemical Corp.: Rigithane 334 Foams.

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products being transported for short distances in less than 24 hours duration.

The Nashville Div. of Avco Corp. in Nashville, Tenn., has for the past two years conducted extensive research in this field and has met the problem with a foamed-in-place polyurethane, steel, and aluminum box-within-a-box container called the "Avcold."

Here Avco bonds a steel outer shell to an inner liner of aluminum with 2½ in. of 2-lb foamed-in-place polyurethane; results: an extremely rigid, durable unit with an insulative ability to maintain 0°F products within a 5° tolerance for 24 hours, without the addition of dry ice or refrigeration.

Another prominent manufacturer of gas refrigerators has done much the same thing with their recent release of this year's models, offering a lighter weight, more efficient unit which promises a longer life and service than any of their earlier models.

Contractors Use It Successfully

A number of contractors have successfully foamed urethanes into wall cavities and spray surfaced cold storage buildings requiring thermally efficient structures for the housing of frozen foods and meats.

Spraying urethane foams on the outer surface of pressure "tents" has proven to be a simple and inexpensive way of providing additional cold storage space where time or capital will not allow conventional construction. Thus, a "building" can be produced, made entirely of polyurethane foam, offering exceptional strength and insulative characteristics. The military has, for a number of years, experimented with this approach to hasty erection of temporary containments and enclosures and have proven these field methods to be a complete success.

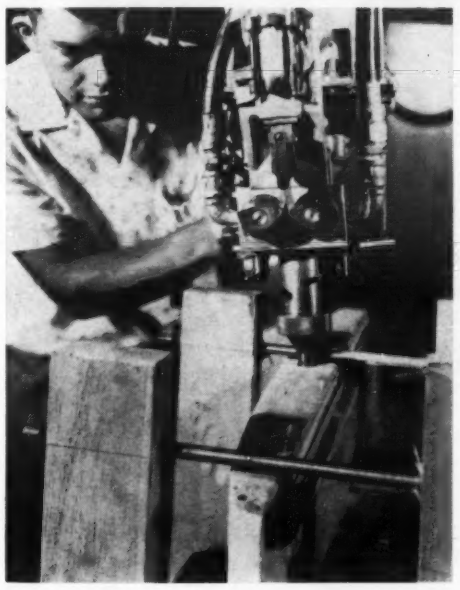
Aid In Erection Of Walk-In Coolers

The erection of modular panel walk-in coolers for the grocery industry is not new, but the use of lightweight, highly insulative foamed-in-place sandwich panels of aluminum, urethane foam, and plywood is. The bonding features of foaming in place make it possible to make an extremely rigid panel without internal structure by bonding the inner sheet to the outer sheet in a one-shot process. These panels are then offered with an interlocking device to allow simple erection of any size cooler required, depending on the modular plan desired.

This plan has been tested in a number of programs in the military for environmental enclosures and promises to be one of the best methods of erecting personnel containments in the arctic or desert expeditions.

Many companies are engaged in study and research programs to utilize the urethanes to their most applicable use with outstanding results. Packaging materials and insulative shock resistant enclosures of refrigerating unit components are examples of the vast field of applications which will make polyurethane foams the material of the future.

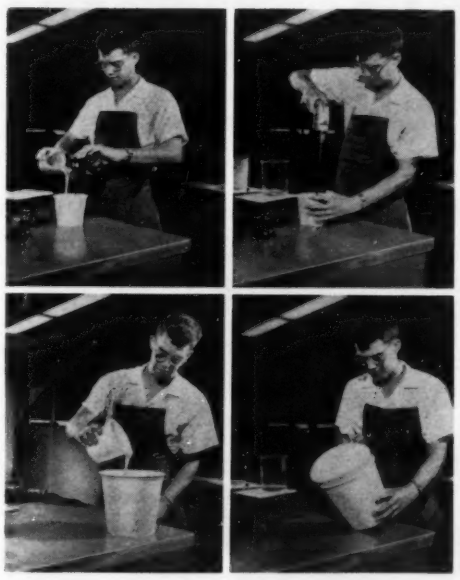
Foamed-In-Place Plastics and How They Are Handled



POURING ARMSTRONG EXPANDOFOAM—a new type of foamed-in-place urethane insulation—into the cavity of a metal refrigerator door by means of a machine which mixes and foams the material. The mixture fills the cavity and solidifies into an insulation material that possesses high thermal efficiency, strength and toughness, and vapor and moisture resistance.

(Photo by General Chemical)

URETHANE FOAMS may be sprayed, as well as poured. Protection for the operator from fumes becomes more important in spraying application.



THESE LABORATORY scenes show handmixing a small quantity of Armstrong Expandofoam®—a new type of foamed-in-place urethan insulation distributed by Armstrong Cork Co. Upper left shows combining a polyether based prepolymer with an activator and inflating agent. In upper right, the liquids are being mixed by hand. Lower left shows the mixture being poured into a larger container for foaming. Lower right shows the mixture at the completion of the foaming cycle as it begins to solidify.

EASILY MIXED in batch form, by hand or power mixer, Nopco Lockfoam offers a distinct advantage over other type materials. The workman here is pouring the blended liquids into the mold. With foaming under way, the mold top will be clamped secure as soon as the pour is complete.

COMPLETED PANEL is removed from the mold. Foamed in 4 by 8-ft sections, the panels can be easily fabricated to meet many special requirements.

Materials Conference Planned by Management Group Nov. 27-29

NEW YORK CITY—A Special Materials Conference will be held by the American Management Assn. Nov. 27-29 at the Savoy-Hilton hotel here.

This meeting, scheduled by AMA's Purchasing Div., will present a comprehensive review of the total company involvement in materials—of how materials are managed as a profit-improvement factor.

The opening-day chairman is Andrew M. Kennedy, Jr., vice president, purchasing and traffic, Westinghouse Electric Corp.

Presentations by top executives in the materials field will cover such areas as new materials for industry, developing specifications, pricing, maintaining quality and reliability, material flow, and profits from materials management.

Speakers and chairmen are:

Rulon Nagley, vice president, materials, North American Aviation, Inc., Los Angeles; George J. Papas, vice president of purchasing, Rheem Mfg. Co., New York City; Henry J. Jacobi, president, Defense Products Div., Brunswick Corp., Muskegon, Mich.; M. Alvis, manager, manufacturing, General Electric Co., Household Refrigeration Dept., Louisville; Harry Moore, director of purchasing, International Business Machines, New York City; Fred McDougall, director of purchasing, Allis-Chalmers, Milwaukee; and F. C. McCoard, production programming and control office, Ford Motor Co., Dearborn, Mich.

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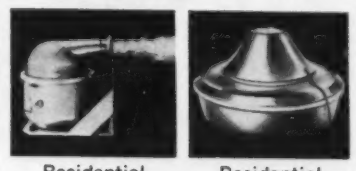

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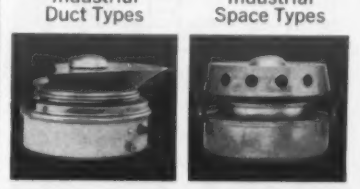

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Dealers! Write Today for Free Information

Walton LABORATORIES, INC.
1186 Grove Street, Irvington 11, N. J.
Chicago Office: 548 W. Washington Blvd.

Please send FREE information on Walton's program for building humidification sales plus the name of the nearest Walton Distributor.
Distributor Inquiries Welcome.

Name _____
Company _____
Position _____
Address _____
City _____ State _____

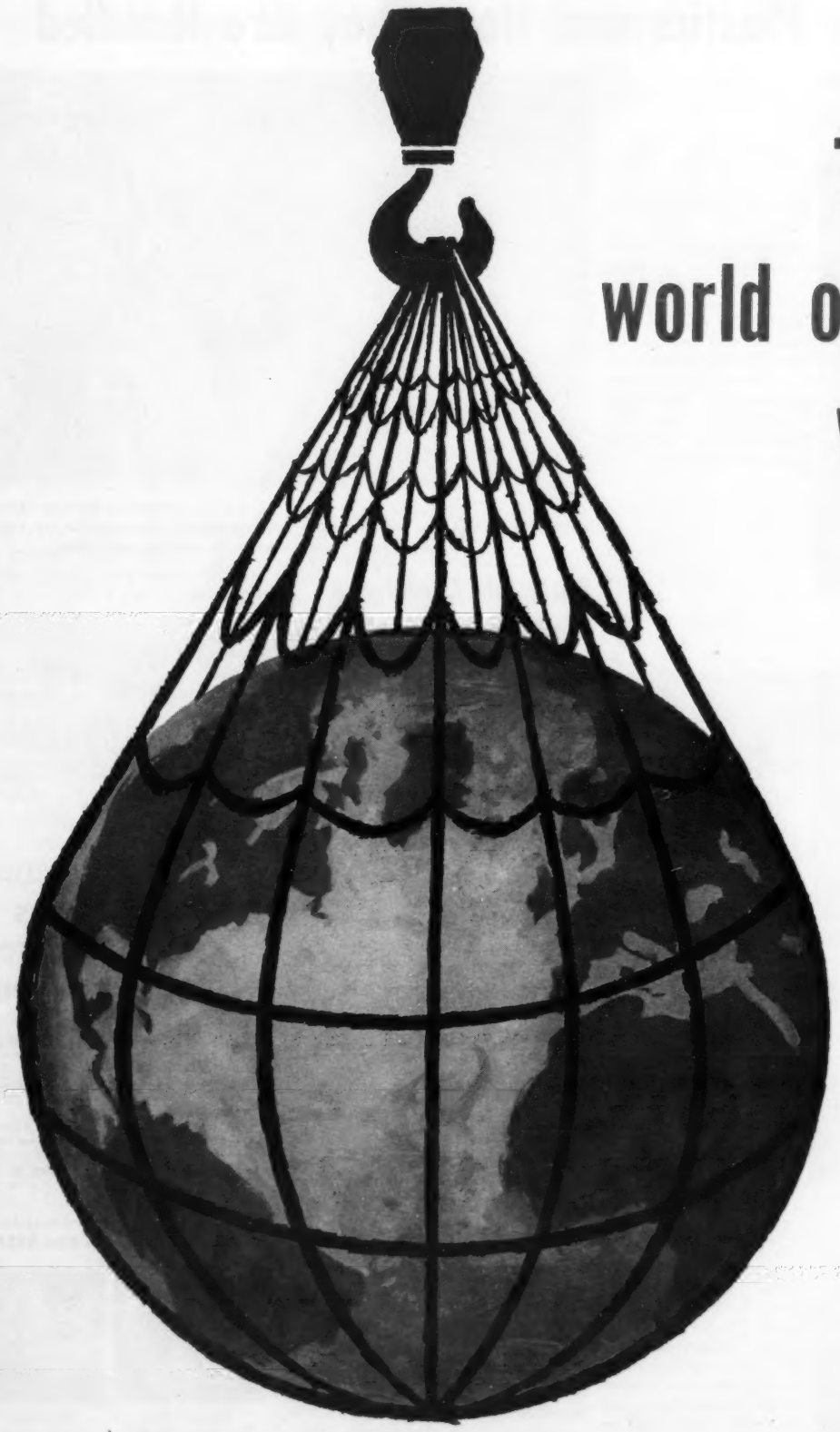
ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

NEWS' CLASSIFIED ADS

MIGHTY MITE MOTOR PROTECTORS

ADD DEPENDABILITY AND SAFETY TO APPLIANCES WITH MIGHTY MITE

MECHANICAL INDUSTRIES PRODUCTION CO.
223 Ash Street — Akron, Ohio
SAA 3339/84C



There's a world of business waiting for your company overseas.

NOW! the NEWS provides you with expanded opportunity to sell the growing world market for air conditioning, heating and refrigeration products.

Based on the overwhelming success of NEWS' annual World Trade Issues, we are designating the

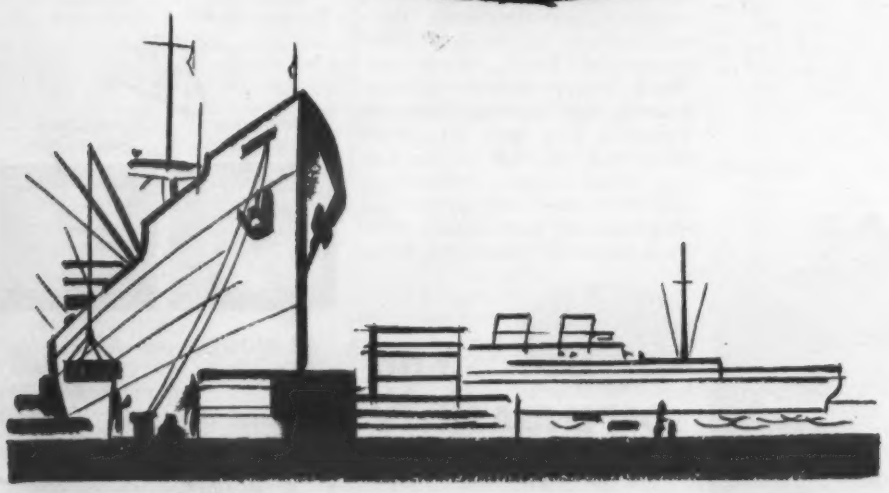
December 18, 1961 issue
April 16, 1962 issue
December 17, 1962 issue

for special World Trade Emphasis, in addition to the annual

WORLD TRADE ISSUE
August 6, 1962

Make the most of this opportunity . . . schedule advertisements in each of these issues beamed directly to NEWS' foreign subscribers in 83 nations. The free world is one market . . . let your company grow with it.

Act now . . . Advertising for the December 18, 1961 issue closes December 6, 1961.



NEW YORK, 521 Fifth Ave., MUrray Hill 2-1928-9, Robert M. Price
CHICAGO, 134 S. LaSalle St., FRanklin 2-8643-4, Rex Smith
LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon
DETROIT, 450 W. Fort St., WOodward 2-0924, Al Schildhammer

AIR CONDITIONING
HEATING & REFRIGERATION
NEWS

The Newspaper of the Industry

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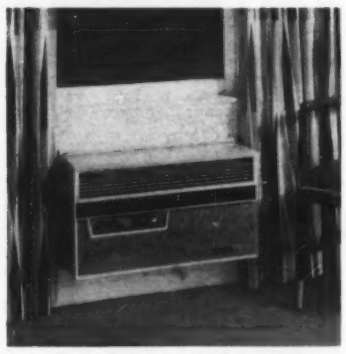


FULLY AUTOMATIC, high penetration Westinghouse air conditioner.

Westinghouse--

(Continued from Page 1, Col. 4)

line includes two heavy-duty models which will remove up to 6 and 8 gals. of moisture a day, it was stated.

More Powerful Blowers

The room air conditioner line will be called the air jet vane "because of the new air delivery system based on more powerful blowers and the air jet vane front grille," it was explained.

"This has flexibility permitting either wide dispersion or concentration of cooled air for maximum penetration. Every unit has a two-speed fan.

Easy installation and mobility feature the "Mobilaire" models in the line, according to Frank Lowery, manager of the room air conditioner department.

The accordion-like mobile frame cames completely assembled and can be fitted into windows ranging from 28 in. to 48 in. in width. The mobile cart accessory permits easy and quick movement of the conditioner from one room to another.

The line includes two custom heavy-duty units that are fully automatic. The units automatically adjust their operation to meet either sudden or gradual changes in temperature. If a room is at a comfortable temperature for two people, Lowery explained, and several others enter the room, the Westinghouse "Comfort Control" automatically adjusts to a higher speed to compensate for the added heat.

Although these are still 1961 units, four of the nine models will carry the National Electrical Manufacturers Assn. certification. The other five, while carrying Btu ratings according to NEMA standards, will not have the certification since they were produced prior to the Sept. 1 certification date.

The Mobilaire line will include the following three models:

MRB117H, a 115-volt, 7.5-amp unit NEMA certified at 6,100 Btu.

MRB119H, a 115-volt, 8.5-amp unit delivering 8,400 Btu, according to NEMA standards.

MRB122H, a 230-volt, 6.1-amp unit delivering 9,500 Btu.

"Features on all models in the MRB series include easy installation, full width condenser air grille, two-speed fan, flexible vent control, powerful penetration, low noise level, and pushbutton controls," the company said.

"The heavy-duty line also includes the air jet grille, pushbutton controls, two-speed fan, and thermostat control. The oversized blower wheel gives improved air delivery.

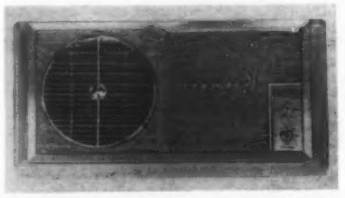
Condensate Disposal

"A new condensate disposal system evaporates moisture without ever putting it in contact with the metal base plate, eliminating any chance of rust or corrosion. It also has a germicidal foam filter. Each of heavy-duty model is packed with a perma-mount kit."

The models, all 230-volt units, in "Super Heavy Duty" line are:

Model MSB122D, rated at 9,500 Btu; model MSB132D, rated at 11,300 Btu; model MSB162D, rated at 13,500 Btu; and model MSB222K, rated at 15,500 Btu. All but the MSB-222K are NEMA certified.

In addition to the Customatic Comfort Control, the custom heavy-duty units also give up to 30% more dehumidification, it was stated. Both models in this series are 230-volt units—MCB222K rated at 15,500 Btu and MCB232K at 16,500 Btu.



ALUMINAIRE room air conditioner by Republic Air Conditioning Co.

Republic--

(Continued from Page 1, Col. 4)

'Republic Aluminaire' line were all tested in the hottest weather in the hottest part of the country," Starnes said. "They are designed for year-round, heavy-duty service anywhere in the world."

Between Oct. 21 and March 1 of next year production in excess of 125,000 units of the new line is scheduled. Total industry production of room air conditioners for 1961 was approximately 1,250,000 units, it was stated.

The Republic Aluminaire models range from 5,800 to 32,000 Btu in capacity.

"The units up to and including 11,400 Btu will operate on 'plug in' 115-volt current," the announcement said. "Each model is of lightweight construction, with practically all parts except the motor, the compressor, and the base pan being made of aluminum.

Oversized Evaporator, Condenser Coils

"Oversized evaporator and condenser coils of copper tube/aluminum fin construction made in Republic's fully integrated Dallas plant are features in all models.

The units are weatherproof, vibration-free, and vandal-proof, Starnes stated. Most are designed especially for simplified installation either through-the-wall or in a window, using the standard equipment installation kit boxed with the unit. Simplified "wall sleeve" kits are available at nominal cost. "Alumin-Guard" housing, made entirely of embossed aluminum, encloses every unit to provide greater protection from the elements, it was pointed out.

'Louvre-Glide'

Another feature is a "Louvre-Glide" telescoping aluminum side panel that "enables normal window installation to be completed in 60 seconds or less."

Starnes said that the Republic Aluminaire line will be distributed entirely through normal air conditioning channels.

"We believe that the unusual adaptability of these units to through - the - wall installation will create a new source of business for appliance dealers, department stores, discount outlets, furniture stores, and other distributors," he said. "With the Republic Aluminaire line dealers will be able to sell to tract developers, apartment house builders, and home remodelers the whole 12 months of the year."

The Republic Aluminaire line is fully warranted and Republic's obligations under there warranties are insured with one of the largest insurance companies in the world with over $4 billion in assets, Starnes stated.

Admiral--

(Continued from Page 1, Col. 4)

moisture from the air per hour. It has pushbutton comfort controls, five of which are illuminated. Also featured are five adjustable air flow louvers, a three-speed fan, and exhaust control.

The new Admiral air conditioners are offered in four series: the slim "Ruler" models with "Flex-O-Mounts" attached for simple installation; "Coronet"; "Royal"; and Imperial. High density fiber glass insulation is used in each series to assure quiet operation and to prevent heat infiltration, it was stated.

Less Than a Foot Deep

"Less than a foot deep, the 1-hp Ruler models can be installed in minutes with the Flex-O-Mount attachment," the announcement said. "Their cooling capacity ranges from 5,800 to 7,200 Btu and are suitable for the average size room. Two models draw only 7½ amperes, while the larger unit with two-speed fan motor draws 10 amperes.

"The more powerful 1-hp Coronet series is rated at 9,000 and 10,000 Btu. They have squirrel cage fans with two speed adjustments. The chassis slides out and can be stored for the winter.

"Two 1½-hp and one 2-hp air conditioners are in the Royal series which operate on 230 volts. These models are rated at 12,000, 15,000, and 17,500 Btu. They have two-speed, squirrel cage evaporator fans, three-position exhaust controls, and can be installed flush inside or outside.

"In addition to the large 2½-hp air conditioner, there is a 2-hp Imperial model rated at 23,000 Btu with pushbutton controls, three-speed evaporator fan, and five adjustable air flow louvers. This unit can cool a small ranch type home.

"All Admiral room air conditioners have automatic thermostats, germicidally-treated polysponge air filters which can be rinsed clean with warm water and replaced in the unit, and rust-resistant galvanized steel cabinets."

ADMIRAL'S 1962 Ruler series with Fex-O-Mount.

An automatic timer that programs a full week's operation for a room air conditioner and reduces operating costs has been introduced by Admiral Sales Corp. as an accessory. The desired "on" and "off" times are set on the lower dial and the desired days of operation are chosen on the upper dial.

The timers are available in 115 and 230-volt models and carry a suggested list price of $20.

Announcing the 1962 line of built-in appliances, Walter D. Krauter, manager-builder division, Admiral Sales, said the Royal series of room air conditioners has a new outdoor weather-guard sleeve that is rust-resistant and chip-proof. It can be installed in either new or existing buildings. The sleeve has a decorative front indoor cover that can be painted or papered for off-season use.

The air conditioners have a cooling capacity of 9,000 and 11,500 Btu and feature three-speed squirrel cage fans, and germicidically-treated polysponge fiilters. They are available in 115, 208, and 230-volt models.

Program for RSES Meeting In Canada--

(Continued from Page 1, Col. 3)

presentations on new developments in the industry, such as the use of liquid nitrogen for refrigerated transporation and freezing; the use of epoxy resins, refrigerated purgers, and centrifugal compressors.

The convention program, somewhat condensed, follows:

THURSDAY, NOV. 2

9:30 a. m.—Convention call to order, Kenneth Wood, convention chairman.

Greetings from the Air-Conditioning & Refrigeration Institute, R. K. Serfass, president.

Greetings from the Air Conditioning & Refrigeration Wholesalers, Thom Muir, executive vice president.

Greetings from the Canadian Refrigeration & Air Conditioning Assn., C. M. Fleming, president.

President's address, Paul E. Darby.

Secretary's report, H. T. McDermott.

Treasurer's report, Charles G. Bell.

Committee reports.

Appointment of committees.

12:30 p. m.—Manufacturers Service Managers Club, RSES, luncheon and meeting.

1-9 p. m.—4th Canadian Refrigeration & Air Conditioning Exhibit.

FRIDAY, NOV. 3

9 a. m.—Information Please.

10 a. m.—"Who Needs the Wholesaler?" Thom Muir, executive vice president, Air Conditioning & Refrigeration Wholesalers.

11 a. m.—"An Introduction to Gas Engine-Driven Systems," Norbert Hall, vice president and manager of the Refrigeration Div., Ready-Power Co.

2 p. m.—"Controlling Pressures In a Refrigeration System," Henry Michalski, manager, Wholesale Div., Controls Co. of America.

3 p. m.—"Refrigerated Purgers," T. H. Rea, general sales and advertising director, Armstrong Machine Works.

4 p. m.—"Heat Rejection," Harold A. Halls, manager, refrigeration products, Recold Corp.

8 p. m.—Get-together party and live cryogenic demonstration, Charles R. Lindquist and Harvey E. Kinne, Linde Co.

SATURDAY, NOV. 4

9 a. m.—Information Please.

10 a. m.—Concluding business session: unfinished business; reports of convention committees; election of officers.

2 p. m.—"Centrifugal Compressors," Arnett Smiley, manager, refrigeration sales, York Corp.

3 p. m.—"Industrial Water Cooling," Perley K. Barker, general manager, Heat-X, Inc.

4 p. m.—"Control Valves and the Reverse Cycle Systems," Richard Willner, chief application engineer, Alco Valve Co.

6:30 p. m.—24th annual RSES banquet.

SUNDAY, NOV. 5

9:30 a. m.—Information Please.

10 a. m.—"Field Use of the High Vacuum Pump," E. G. Neapole, technical representative, Edwards High Vacuum (Canada) Ltd.

11 a. m.—"Epoxy Resins—A New Concept in Refrigeration," N. Bruce Duffett, manager, epoxy resins, Union Carbide Plastics Co.

TVA Area--

(Continued from Page 1, Col. 2)

$3 per kw on resistance heating if the home is centrally air conditioned.

To date, nine power distributors, all in small town or rural areas of eastern Tennessee, or western North Carolina, have elected to participate in the program. All nine are paying bonuses on heat pumps and central air conditioning. Only three are paying bonuses on resistance heat.

In some areas, according to George Munger, chief of TVA's Electrical Demonstration Branch, dealers and distributors match the allowance paid by the power distributors.

Before Bonuses Are Paid . . .

Before bonuses are paid, the homeowner or builder is asked to sign a form provided by the power distributor. The form states that the power distributor reserves the right to inspect the installation, that installation must meet requirements of state and local codes and other requirements specified by the power company, and that payment can be withheld until installation meets needs.

Along with the bonuses, the local company is asked to conduct a regular advertising campaign on the theme "Pleasant Condition Your Home with the Electric Heat Pump."

TVA suggests that the utility run five newspaper advertisements and 25 60-second radio spots during the first month of the campaign. The second month this can drop to two 30-in. ads and 15 radio spots. Every month thereafter the utility should run one 30-in. ad and 10 60-second spots. Cost is estimated at $655 a year.

TVA suggests that before such a promotion is launched that all air conditioning contractors and building constructors be invited to a meeting at which the details of the promotion are explained to them.

The nine power distributors currently using the promotion are Holston Electrical Cooperative, Morristown Power Service, Appalachian Electrical Cooperative, Cleveland Electrical Service, Fort Loudon Electrical Cooperative, Sweetwater Electrical service, Greenville Light & Power, Sequachee Valley Electrical Cooperative, and Murphy Power Board.

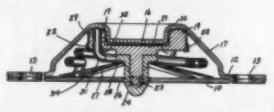
PATENTS

Week of June 20 (Continued)

2,988,980. HEAT DISTRIBUTION PANEL. Hans R. Tschudin, 12 France St., Norwalk, Conn.

1. Air conditioning apparatus for a room, comprising a plurality of thin, lightweight air distribution panels covering the entire wall and ceiling surfaces of said room, each of said panels including a front wall, a rear wall, and spacer means connecting the front and rear walls closely spaced from and parallel to each other, said front and rear walls defining therebetween an air passage channel of shallow depth, means mounting said rear wall on a respective surface with the air passage channel in heat-exchange communication with said surface, and means for feeding air of a regulated temperature into said air passage channel at a low rate of flow at one end of said panel, said spacer means being sized and arranged to form a series of narrow air flow ducts in said air passage channels. . . .

2,989,083. LIQUID EXPANSION POWER ELEMENT. Louis J. Siri, South Bend, Ind., assignor to Penn Controls, Inc., Goshen, Ind., a corporation.

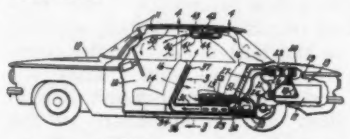


3. A power element assembly adapted to accommodate a solid charge liquid fill comprising a rigid plate having a circular configuration and an annular boss extending from one face of said plate adjacent the marginal edge thereof, a flexible metallic diaphragm overlying said one face of said plate and sealed to said plate, said diaphragm having a circumferential corrugation therein continguous with said annular boss, and a support plate closely overlying the face of said diaphragm remote from said plate, said support plate having an annular arcuate portion accommodating said annular boss and diaphragm configuration. . . .

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

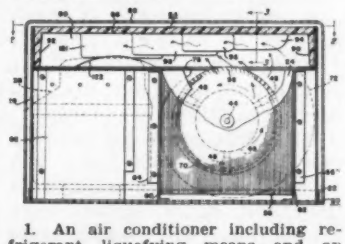
Week of June 27

2,989,854. VEHICLE REFRIGERATION. Richard E. Gould, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



1. In a vehicle, an engine for propelling the vehicle, said vehicle having walls defining a passenger compartment therein provided with spaced apart front and rear seats extending transversely thereacross, a refrigerating system carried by said vehicle including a compressor, a condenser, an evaporator and refrigerant flow connections therebetween, said compressor being operated from said engine, a conduit extending along the floor of said compartment forwardly therein from the vicinity of said rear seat and thence upwardly along the back of said front seat, said conduit being provided with an inlet adjacent said compartment floor and an upwardly facing outlet end terminating behind said front seat intermediate said floor and the ceiling of said compartment. . . .

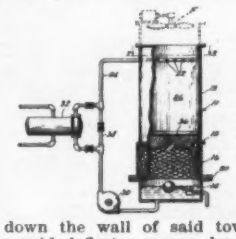
2,989,855. REFRIGERATING APPARATUS. Richard E. Thompson, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



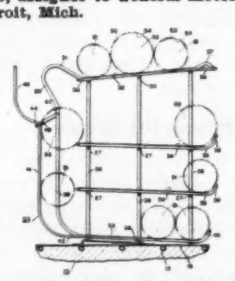
1. An air conditioner including refrigerant liquefying means and an evaporator operatively connected to the liquefying means, duct means associated with said evaporator having a discharge portion provided with an inlet in one wall and an air deflector and silencer having surfaces of foamed plastic resin upon an opposite wall including a duct wall portion parallel to said one wall directly opposite said inlet and directional vanes integral with and projecting from said parallel duct wall portion toward said one wall, and means for circulating air through said evaporator and through said inlet against said vanes and duct wall for discharge through said discharge portion.

2,990,031. COOLING TOWER DIVERTER. Vesta P. Michael, Wichita, Kan., assignor to Koch Engineering Co., Inc., Wichita, Kan.

1. In a cooling tower comprising an open-end enclosure having spray means disposed therein adjacent said open end adapted to spray liquids to be cooled into said tower interior in the general direction of the bottom of said tower, and air-permeable water-de-entraining means defining a peripheral portion of said tower bottom, the improvement comprising deflector means of inverted frustoconical configuration having its larger peripheral end portion disposed in fluid-sealing engagement with a peripheral wall portion of said tower disposed about the upper edge end limit of said water-de-entraining means whereby water draining down the wall of said tower engages said deflector means, by-passing said water-de-entraining means, and flows from the deflector smaller opening into said underlying tower bottom.

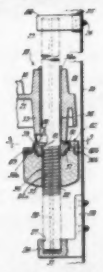


2,990,062. REFRIGERATING APPARATUS. Lester M. Miller, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



1. A combined substance-containing can sorting and retaining device for use in a refrigerated chamber of a refrigerator cabinet normally closed by a door comprising, a unitary frame-like structure supporting vertically spaced apart open front ledges each adapted to receive and have stored thereon a plurality of elongated substantially cylindrical cans, a loading portion for said device supported by said structure above and in vertical alignment with said storage ledges, said loading portion being adapted to have cans of a predetermined diameter and cans of a greater diameter than the cans of said predetermined diameter placed at random thereon. . . .

2,990,068. ADJUSTABLE SHELF MECHANISM FOR A REFRIGERATOR. Harry J. Topel, Muskegon, Mich., assignor to Borg-Warner Corp., a corporation of Illinois.



8. A shelf structure comprising a fixed vertical threaded shaft provided with a longitudinally extending keyway; a shelf having a sleeve receiving said shaft; a cylindrical member withing said sleeve and disposed between said sleeve and shaft permitting rotation of said shelf relative to said shaft, and having a key integral therewith and immovable relative thereto received within said shaft keyway for preventing rotation of said member relative to said shaft, said member having a portion extending below and positioned beneath and engaging said sleeve. . . .

2,990,106. AXIAL FLOW MULTI-STAGE COMPRESSORS. Hugh Robert Morton Craig, Whetstone, near Leicester, England, assignor to The English Electric Co. Ltd., London, England, a British company.

1. An axial flow multi-stage compressor comprising in combination: a stator, a rotor, a plurality of rows of stator blades and rotor blades attached to the said stator and rotor alternately in the axial direction thereof, each row of the said stator blades and the successive row of rotor blades forming together a stage of the said multi-stage compressor, the rotor blades of consecutive stages of the said multi-stage compressor being matched in angle of incidence so as to operate on corresponding points of their respective lift graph plotted over angles of incidence, and the rotor blades of at least one middle stage having a negative angle of incidence of a higher absolute value than that interpolated between that of the immediately preceding and immediately following stage.

(To Be Continued)

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

REFRIGERATION AIR conditioning serviceman, 16 years' experience. Domestic, commercial equipment to 150 tons. Some heating and other appliances, certificate member RSES. Five years' foreman in civil service, desires permanent employment in sales, service, or both. Prefer Texas, Arizona, California area but any area considered. GERALD GRUBER, 1818 Marc, Salina, Kansas.

REFRIGERATION AND air conditioning training course graduate wants employment. Write to L. VIKSNE, 15882 Appoline, Detroit 27, Michigan or phone UN 2-2348.

EXPERIENCED APPLICATION sales engineer with rare practical background available to progressive manufacturer or distributor as representative. Vast knowledge of refrigeration, air conditioning. Successful sales record, administrative detailing. Presently employed, looking for greater challenge with potential. Will travel extensively. Will relocate. Have positive interest in control application. P. O. BOX 6023B, Orlando, Florida.

ELECTRIC MOTORS. Long experience with large manufacturer in sales and application for major appliances, including refrigeration and home laundry, and household heating. Now employed. Desire position field sales or sales management same or related field. Now located Michigan but consider relocating. BOX A6909, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

PRODUCT ENGINEERS "A" & "B"—Residential heating and cooling product. American-Standard, Air Conditioning Division, is expanding its development laboratory and desires graduate engineers with two years' experience for junior engineers and six years' experience for senior engineers in either or both types of product. Located in Elyria, Ohio, just 25 miles west of Cleveland. Send complete resume and salary requirements to A. B. Von Dera, Mgr. of Employment, AMERICAN-STANDARD, Air Conditioning Division, Elyria, Ohio.

CARRIER DISTRIBUTOR needs man capable of selling self-contained equipment from original contact thru closing, including load calculation, preliminary design, cost estimating. Prefer man with minimum family. Good long range opportunity for qualified person with interest in Hawaiian way of living. Air mail resume to ROBERT MACRAE, P. O. Box 2935, Honolulu, Hawaii.

SALES ENGINEER to sell air conditioning and heating for leading Carrier air conditioning contractor with complete sheet metal shop, steam and hot water, and refrigeration piping. Complete service department. In business for 39 years. Residential, commercial and industrial. Write for application to SHAKER AIR CONDITIONING COMPANY, 4294 Lee Road, Cleveland 28, Ohio.

AIR CONDITIONING, heating mechanic, 30-45, experienced. Vacation and insurance benefits. Send photo and resume. T. M. WILLIAMS CO., 979 Volusia Ave., Daytona Beach, Florida.

WANTED — ENGINEER air conditioning design and development — strong in electrical. Write P. O. BOX 35546, Dallas 35, Texas.

SALES ENGINEER, technical graduate or equivalent with refrigeration and sales experience. Age 23 to 36. Interesting work calling on contractors, wholesalers and air conditioning and refrigeration manufacturers in established territories for a nationally known control manufacturer. Starting salary based on experience. Replies should contain complete resume of education and experience. All replies will be kept confidential. BOX A6829, Air Conditioning, Heating & Refrigeration News.

BIG MONEY opportunity exists for experienced salesmen on packaged and applied equipment lines of old established air conditioning and refrigeration equipment manufacturer. Prime territories available to qualified manufacturers' representatives. For confidential interview arrangements send resume to BOX A6884, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER—Nationally known Midwest manufacturer has position available for graduate engineer, or equivalent, with refrigeration and sales experience to call on original equipment manufacturers. Starting salary based on experience. Replies should contain a complete resume of background and experience, BOX A6888, Air Conditioning, Heating & Refrigeration News.

LIVE IN Florida — Manufacturer of ventilating fans located in southern Florida needs engineer, age 30 to 40, to help in all phases of company management. Must have experience in design, production, and application of all types of ventilating fans. Opportunity to advance with 25-year-old regional company undergoing rebuilding and expansion to national basis. Salary approximately $10,000 yearly. Please send details of education and experience. All replies confidential. BOX A6902, Air Conditioning, Heating & Refrigeration News.

HOME STUDY school has opening for man with good knowledge of theory, capable of writing letters and course materials. Good working conditions and pension plan. Location, Chicago. Our employees know of this ad. Replies will be kept confidential. Give full details. BOX A6903, Air Conditioning, Heating & Refrigeration News.

COMMERCIAL REFRIGERATION and air conditioning service engineer. Position requires knowledge of Carrier heating and air conditioning equipment. Year-round work. Send references and experience. Northern Illinois area. Only well qualified men need apply. BOX A6904, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER — Challenging opportunity for experienced man in sales and application of air conditioning systems, both large central station and packaged equipment. For New York City area of operation. Send resume and salary requirements to BOX A6905, Air Conditioning, Heating & Refrigeration News.

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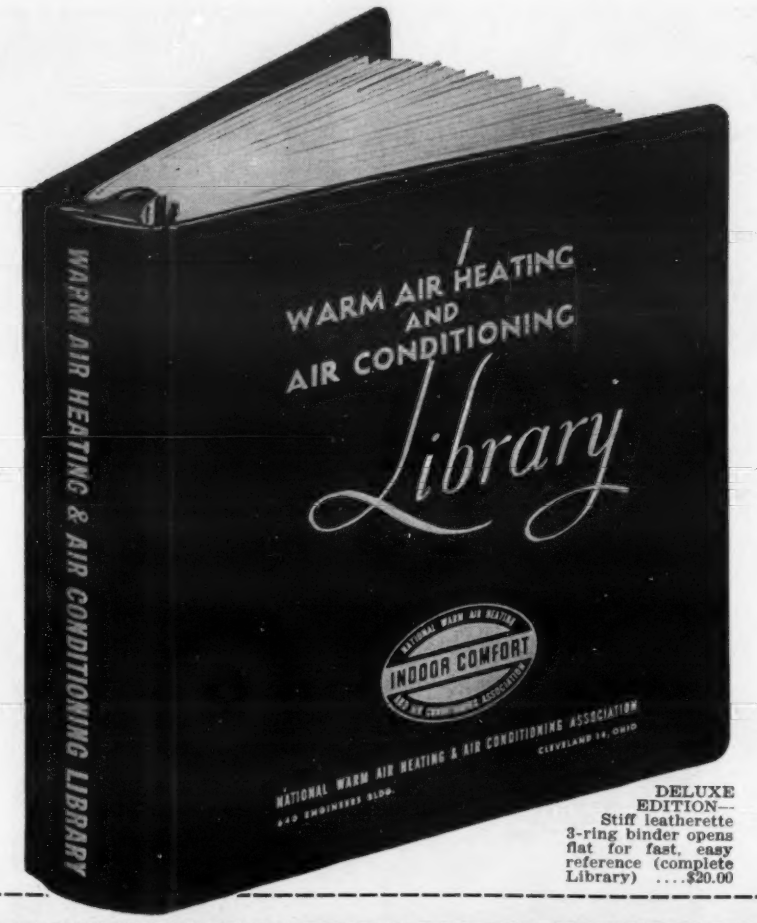

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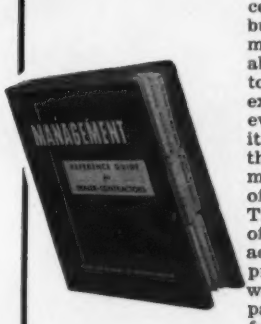
MANAGEMENT GUIDE for DEALER-CONTRACTORS



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RACCA's 'Defrost-O-Gram'--

(Continued from Page 1, Col. 2)

At the same time, the report from the board meeting held in Las Vegas stated that President McCarty reminded the board that RACCA will still continue to receive reports from its members pertaining to any infringements of the trade practice rules for refrigeration and air conditioning contractors issued in 1956 by the Federal Trade Commission.

The first bulletin issued also contains a copy of the resolution passed at the last national convention which emphasizes RACCA's intent to uncover unfair practices, particularly direct sales to consumers by manufacturers, and members are urged to use a special reporting form in reporting such practices.

Manufacturers To Outline Policy

One of the features of the "Defrost-O-Gram" will be guest editorials from manufacturers, and in the first one Joseph B. Elliott, president, York Div., Borg-Warner Corp., outlines his statement of policy pertaining to his company's relationship with contractors. In the essence of his statement he says:

"York will not compete with contractors in the sale or installation of York-manufactured and related air conditioning, on plan and specification work, as long as at least one friendly contractor is bidding the work. By a 'friendly' contractor we mean one who will give York a fair opportunity to secure the business on a competitive basis.

"Likewise, York will not compete with consulting engineers in offering engineering services to owners unless the owner has declared with finality that the services of a consulting engineer will not be retained and that he intends to purchase the installation, engineered, delivered, and installed from a manufacturer. Even in those rare cases, York uses contractors and consulting engineers to the maximum extent possible."

In other action the board approved a stepped-up membership drive. President McCarty said that the campaign is directed to union and non-union contractors alike—"the important thing being the contractor meeting the membership qualifications set by RACCA."

New Committees Authorized

To enlarge the scope of the association's activities, the board gave approval to the establishment of the following committees:

Sales Promotion Committee whose purpose it will be to establish sales training programs and marketing programs for contractor members; Business Management Committee for the purpose of studying and proposing business management training programs within the industry and developing industry institutes in colleges and universities; Refrigeration and Air Conditioning Mechanics Education Committee for the purpose of upgrading the installation, maintenance, and service abilities of the industry's mechanics; Statistics Committee to develop the necessary and important statistics essential to operating a contracting business.

Cost Accounting Committee to establish sound cost accounting methods and techniques necessary to obtain a fair margin of profit; Office Procedure and Records Committee to develop studies and surveys essential for the development of standardization of office forms, personnel forms, and other reporting and recording forms necessary for modern business practices; Public Relations and Advertising Committee to study and service members needs in reference to creating an image of the contracting industry favorable to public acceptance and for the purpose of better marketing the industries' products and services; and an Insurance Committee to study the needs of hold harmless insurances, warranty insurance, and other forms of insurance.

RACCA-NATIONAL BOARD OF DIRECTORS met Oct. 14-15 at Riveria hotel, Las Vegas. Left to right are: Warren W. Farr, Cleveland; Herschel O. May, Berkeley Calif.; Arthur M. Palen, St. Paul; Brooks C. Reeder, Detroit; George T. Howe, Chicago; Dudley Cawthon, Miami; Walter McCarty, Chicago; Don L. Kissell, Los Angeles; H. P. Schuch, Los Angeles; Harvey W. Hottel, Silver Spring, Md.; T. C. Alexander, Denver; D. M. Brown, Chicago; Al Hanson, Glendale, Calif.; and I. Monsen, Bloomfield, N. J.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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